

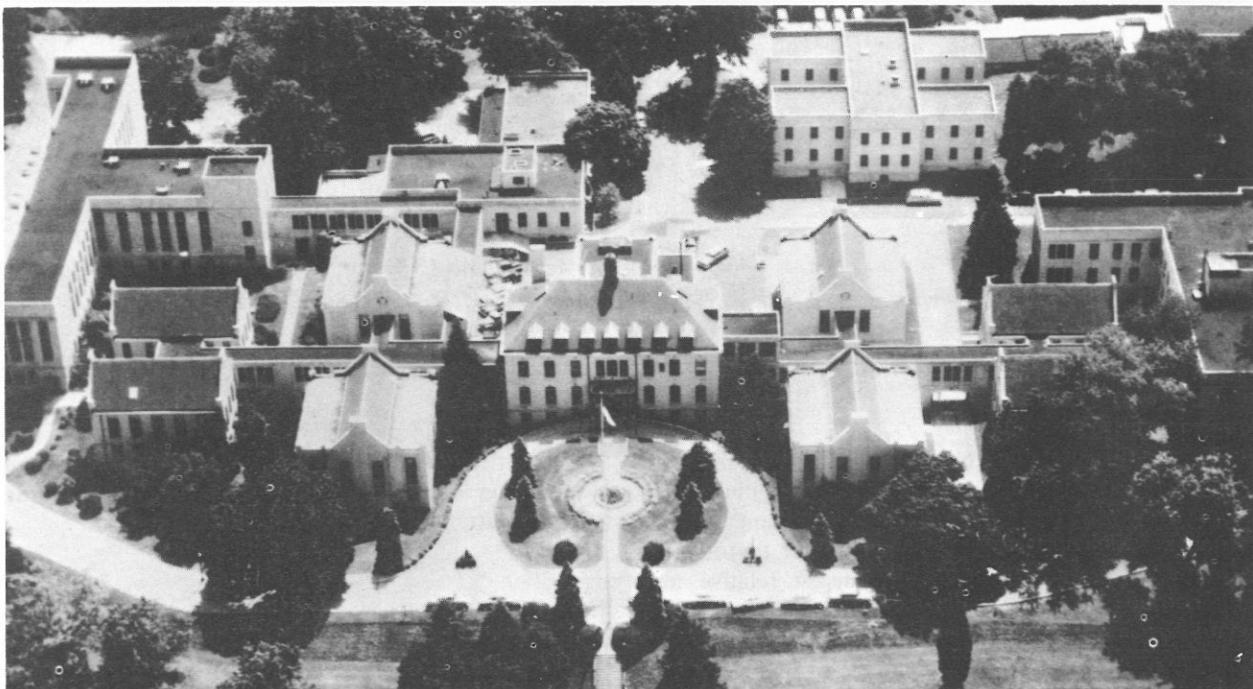


UNITED STATES NAVY Medical News Letter

Vol. 45

Friday, 12 March 1965

No. 5



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United States Navy
MEDICAL NEWS LETTER

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No. 5

Rear Admiral Robert B. Brown MC USN
Surgeon General

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Policy

The U.S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, sus-

ceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U.S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland 20014, giving full name, rank, corps, and old and new addresses.

FRONT COVER: Aerial view of the U.S. Naval Hospital, Annapolis, Maryland (Official U.S. Navy Photograph). The first structure at the U.S. Naval Academy to be used as a hospital was a small, four room wooden building constructed in 1846 "on the plain (parade grounds below the Superintendent's House, near the old mulberry tree". The second hospital, of three stories, was near the present Officers' Club. It was occupied from 1857 to 1871. The third hospital, erected on a plateau overlooking the Severn River, was occupied in 1871 and closed in 1876. The site was too near the swamps along the river and the incidence of malaria was so high among the patients and staff that the hospital was closed from 1876 to 1907, at which time the fourth and present hospital was constructed and occupied.

The improved hospital facilities of today are largely the result of major permanent construction in 1939 and 1941. In 1939: Three story West Ward Building, housing Wards 9 and 10, Operating Room, X-Ray Department, EEN&T Clinic, Surgical Dressing Rooms, Physiotherapy Department, and a Personnel Records Office. In 1941: New three story East Ward Building containing two large wards, a Dependents' Ward and Clinic, Labor and Delivery Rooms, Nursery, Dental Office, Medical Storerooms, Finance Office and Morgue. Also, in 1941, there were built modern quarters for Nurse Corps Officers and Hospital Corpsmen, and a subsistence building, housing the Food Service Department, Auditorium and Library.—Editor.

The issuance of this publication approved by the Secretary of the Navy on 4 May 1964.

ADMIRAL KENNEY'S MESSAGE TO ALL HANDS

PRIOR TO HIS RETIREMENT AS SURGEON GENERAL, REAR ADMIRAL E. C. KENNEY FORWARDED THE FOLLOWING LETTER TO ALL MEDICAL ACTIVITIES UNDER THE MILITARY COMMAND OF THE CHIEF, BUREAU OF MEDICINE AND SURGERY. SINCE THE SENTIMENTS EXPRESSED IN THIS LETTER APPLY TO ALL PERSONNEL OF THE NAVY MEDICAL DEPARTMENT WHOSE ENERGIES AND LOYAL SUPPORT MADE POSSIBLE THE ACCOMPLISHMENTS DURING HIS APPOINTMENT, ADMIRAL KENNEY DESIRED THAT THIS LETTER BE PUBLISHED IN THE MEDICAL NEWS LETTER:

"Rather than meditate on my impending retirement on 1 March, I would much rather reflect on the accomplishments of the Navy Medical Department during my term as Surgeon General. This has been modest in some areas and quite substantial in others. Regardless of the degree, it is a tribute to the selfless dedication, the enduring energy, the faithful cooperation and loyal support of that superb group of officers, enlisted men and civilians which constitute the personnel of the Medical Department.

It is true that we require adequate funds, suitable facilities, modern equipment and ample drugs and supplies to complement our professional skills but, in the end, it is the intelligent use of these inert objects in the practice of our profession which fulfills our mission to the Navy.

Our business is providing a service to the Navy. We relieve suffering and restore health whenever possible. Our service is very personal in its nature and, not infrequently, is provided during periods of emotional stress or crisis. This only serves to increase our responsibility to succeed since our results are so vital to the individual and to his or her loved ones.

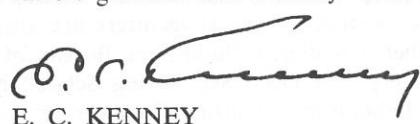
During these past four years our personnel allowances in all corps have increased; our allotment of funds has grown; training and education have expanded; new facilities have been constructed with particular attention to out-patient clinic spaces and intensive care areas for the hospitalized patient as part of a progressive care concept; rapid medical augmentation of our ships of the fleet and marine forces has been planned and successfully tested under emergency conditions; an increased awareness has stimulated bio-medical research in the life-sciences and life-support systems; preventive dentistry has received major attention; our medical Reserve programs have been reoriented and, hopefully, strengthened; and our stature in the healing arts has increased.

I doubt if there has been any other period when the Congress, the Secretary of the Navy, the Chief of Naval Operations, and others in positions of authority have had more interest and sincere concern regarding the health and well-being of the serviceman and his family. The support we have received in our bio-medical research and patient-care areas has been superb in every instance where we could present an intelligent and realistic requirement. All this occurred during a time when many other programs and new weapons systems were vigorously competing for recognition and support. The equitable apportionment of assets available to the Navy is a thing which would challenge the wisdom of a Solomon but I do believe we have received a reasonable share. This might logically be questioned by the staff in some of our major treatment facilities where the demand for professional services almost overwhelms their capability but I believe sincere reflection will reveal the gains we have made.

I am confident that my eminently capable successor, Rear Admiral Robert B. Brown, will provide a superb quality of leadership and direction. Talented educator, skillful surgeon and capable administrator, he will bring his varied talents to the task of projecting Navy medicine to greater heights.

I am deeply conscious of the opportunity that has been mine to play a part in this medical drama of service to our great Navy and I want to sincerely thank you and all those persons whose professional skill and tireless energy have made my task more pleasant and rewarding.

I wish to extend to you and all my colleagues and associates my sincere gratitude and a hearty "Well Done."



E. C. KENNEY

SUBMARINE MEDICINE SECTION



SCHOOL OF SUBMARINE MEDICINE GRADUATES CLASS OF THIRTY-FIVE MEDICAL OFFICERS

On 19 December 1964, thirty-five medical officers graduated from the School of Submarine Medicine, a department of the U.S. Naval Submarine Medical Center, Submarine Base New London, Groton, Conn.

CAPT Robert C. Gillette USN, delivered the commencement address. CAPT Gillette is Commander of Submarine Flotilla TWO and Submarine Squadron TWO. He was introduced by CDR A. Dalton James MC USN, Director of the School of Submarine Medicine. Diplomas were presented by CAPT Charles L. Waite MC USN, Commanding Officer of the Submarine Medical Center.

The honor man of the class was LT Robert N. Sawyer MC USN, who received the Surgeon General's award in absentia, since an operational assignment with the Blue Crew of USS Sam Houston required LT Sawyer's departure prior to graduation. Six other members of the class graduated with distinction: LT Robert Crafts Jr., LT Thomas A. Gehring, LCDR Walter F. Miner, LT Robert M. Moore, LT John P. Smith, and LT Neal E. Winn,—all of the Medical Corps. LT Sawyer came into the Navy upon receiving his MD degree from Western Reserve Medical School, Cleveland, Ohio, in 1963. He served his internship at the U.S. Naval Hospital, Oakland, California.

During the 22 week course of instruction in the New London School, prospective submarine medical officers are fully oriented and prepared for duty in submarine and diving billets. Phases of diving medicine, submarine medicine, respiratory physiology, mathematics, nuclear physics, radiobiology, radiation and atmosphere control aboard submarines, and basic line officers' submarine training, are among the subjects covered by the School.

Although the School's staff prepares the curriculum and qualified instructors are assigned to implement the course of instruction, guest lecturers are also obtained from other activities, including the Bureau of Medicine and Surgery, the Deep Sea Diving School, Naval Research Laboratory, Marine Engineering Laboratory,

Brookhaven National Radiation Laboratories, Preventive Medicine Unit #2, and Yale Medical School. The Medical Center's Research Department and the Basic Officers' Submarine School at the New London Submarine Base provide additional assistance.

Before the School of Submarine Medicine was established in New London, medical officers receiving diving training were formerly sent to the Deep Sea Diving School in Washington, D. C. To accomplish this type of training in New London, base and fleet facilities are utilized. "Hard Hat" diving instruction is given on board local submarine rescue ships while escape training, pressure chamber indoctrination and SCUBA instruction is conducted in the Submarine School's escape training tank.

The last class of Prospective Submarine Medical Officers convened in February 1965. In addition to U.S. Navy doctors, six foreign Navy medical officers are attending this class.

This class had several "firsts" in its record: It is the first to graduate under the auspices of the Submarine Medical Center, commissioned at the local base on 1 July 1964; it is the largest class ever to graduate at the Submarine Base, it has the highest number of specialists in it—three internists, one pediatrician, and one radiologist; it is the first class to receive its deep sea diving training on locally operating submarine rescue vessels; and it is the first class to include one Commander and three Lieutenant Commanders.

Twenty-seven of the graduates were assigned to Polaris submarines. Of those remaining, two received orders to Submarine Squadron Staffs, and six were sent to nuclear reactor training.

While on their initial assignment as Submarine Medical Officers, they may earn their "dolphins", thereby adding "qualified submariner" to their title. To accomplish this, they must receive the recommendation of their commanding officer, publish a thesis pertaining to

submarine or diving medicine, satisfactorily complete a comprehensive examination, and serve three months in a submarine or in a diving billet.

Submarine Medicine is the military medical specialty which supports all underwater operations in the Navy.

This includes providing medical services to the crews of all submarines, deep sea divers and underwater swimmers. In general terms, the practice of submarine medicine can be considered a combination of general practice and of occupational medicine.

PROJECT ARGUS: THE NEUROPSYCHIATRIC EFFECTIVENESS OF FUTURE NAVAL WEAPONS SYSTEM CREWS

Forwarded to the Medical News Letter by CAPT John R. Seal MC USN, Commanding Officer, Naval Medical Research Institute, NNMC, Bethesda, Md. 20014.

Operational requirements of naval weapons systems of the 1980's will include prolonged cruises of deeply submerged vehicles manned by small crews. Heavy psychiatric demands will be placed upon crew members, who must perform effectively under prolonged physical and geographical isolation, and in environments severely restricted as to amount and variety of social and sensory stimulation.

Anticipating that such stress could generate emotional and social problems which would interfere with crew performance effectiveness, the Special Projects Office, BUWEPS requested and offered to fund a BUMED-managed research project which would provide means of assuring optimum neuropsychiatric effectiveness in crews of the planned weapons systems. Within BUMED, it was recognized that such research would be vital to fulfillment of its responsibilities to the fleet of the 1980's, and so this research challenge was accepted. It was also recognized that existing research programs in preventive and clinical psychiatry, neurology and psychophysiology, and adjustment to special environments had necessarily been developed, staffed, and equipped with orientation to current needs of the fleet, and could not absorb the proposed research goals without detriment to ongoing work. It was clear, therefore, that a new research capacity would be required for the proposed program, and NMRI was selected as the logical location for development of this capacity.

At NMRI, establishment of the proposed program, short-titled "Project Argus," commenced in 1961 with a general definition of the required research effort, which was to be a five-to-ten year study of small groups in isolated, restricted environments, concentrated on: (a) crew composition and organization to maximize performance effectiveness; (b) identification of social and emotional factors producing crew disruption, and development of corrective measures; (c) refined criterion measures of crew effectiveness; and (d) techniques for minimizing the impact of stimulus-poor, isolated, and restricted environments on crew effectiveness. It was estimated that Project Argus would require

an average of \$300,000 per year for the initial five years, and the office of CNO provided a written commitment to provide such funds.

During the next three years, Project Argus became fully operational. The current staff consists of one psychiatrist, nine Ph.D. investigators who represent social, clinical, and experimental psychology, and the personnel necessary for technical, administrative, and secretarial support. Physical facilities include: (a) six "deep isolation" laboratories which provide complete control over external visual and auditory stimulation, and which permit studies of small groups ranging in size from two to thirty, under conditions ranging from routine activities in isolation to virtual immobilization in darkness and silence; (b) four small group laboratories equipped with one-way vision screens, communications systems, and task equipment; (c) four multi-purpose laboratories equipped with closed-circuit TV as well as communications and task equipment. Defined by its mission, development, staff, and equipment, Project Argus is the only research effort within either DOD or NASA currently possessing the capacity for work in the problem areas described above.

During the past year, activity under Project Argus has shown a marked shift from emphasis on staffing and instrumentation to active pursuit of research and analysis. The most extensive study completed was undertaken jointly by the Group Composition and Criterion branches. Its goal was to determine how the effects of isolation and confinement could be modified by group composition in terms of member personality traits: need for achievement, need for affiliation, need for dominance, and dogmatic styles of thought. It was found that certain pairs of men tolerated several days of isolation with relative ease, while others, particularly those in which both men were highly dominant, showed severe interpersonal conflict and were able to endure for less than ten days in isolation. Related efforts in the group composition area centered on individual styles of comparing one's self with others. The results indicate that these "social comparison" styles are important de-

terminants of the stability of the individual's self-concept and, by inference, of individual psychiatric stability in small isolated groups.

In the Group Processes Branch, major efforts centered on the interaction of motivation, personality characteristics, and intelligence as determinants of task performance and response to social pressures. It was found that an individual's response, in both direction and degree, to motivational manipulations is affected by his intellect and personality; in particular, one individual type characterized by marked deterioration in performance under conditions of increased reward, was identified.

The activities in the Environmental Restructuring Branch centered mainly on instrumentation of the deep isolation laboratories. Considerable progress was made also in developing collaborative studies of the effects of monotony in isolation, in identifying measures of an individual's isolation tolerance, and in development and validation of measures of subjective stress and emotional symptomatology in isolation.

During the year, much progress was made in establishing effective liaison with the Naval Medical Neuro-psychiatric Research Unit in San Diego, with Project SEALAB, and with other civilian laboratories in the U.S. and Canada where sensory deprivation and social isolation research is conducted. Further, Project Argus staff personnel actively participated in a Summer Study Session at the Naval Postgraduate School, Monterey under sponsorship of the Polaris *ad hoc* Group, with the mission of defining requirements for a 20-year re-

search and development program for the Navy's achievement of a deep-ocean capability.

During the remainder of FY 65, the bulk of research will progress along lines indicated by results to date, and as guided by the basic conceptual framework of Project Argus which relates events of the "personnel subsystems" to ultimate criteria of effectiveness and cost. The first studies using the deep isolation laboratories are planned for early CY 65.

In subsequent years, improvement in Project Argus' capability along neurophysiological and psychopharmacological lines is planned. Many of the behavioral responses occurring under isolation and confinement appear associated with, or derived from, physiological changes which can and should be measured and integrated with psychological changes. On the basis of such knowledge, it appears likely that psychopharmacological means of facilitating small crew performance effectiveness in isolation could be researched and developed.

NOTE: Trained submarine medical officers provide advice, guidance, and consultation to the staff of Project Argus. When adequately trained and experienced, and if sufficiently interested, qualified submarine medical officers can be assigned to duty in this or similar research billets. If you desire further information regarding the Submarine Medicine Program, address inquiries to CDR John H. SCHULTE MC USN, Director, Submarine and Radiation Medicine Division, Bureau of Medicine and Surgery, Navy Department, 2300 E. Street, N. W., Washington, D. C. 20390.—Editor

ORIGINAL ARTICLES

PREVENTION AND TREATMENT OF HEAT CASUALTIES IN THE MOJAVE DESERT

*CDR B. G. Clarke MC USNR (Ret), Assistant Professor of Urology, Northwestern University Medical School; Urologist, St. Francis Hospital, Peoria, Illinois.**

A study was made of heat casualties among Marine Corps Reservists occurring during three-day field exercises held during the second week of Annual Field Training during the summers of 1962, 1963 and 1964 at the Marine Corps Base, Twentynine Palms, California. During the 1962 exercise heat casualties severe enough in the judgement of umpires, unit leaders or unit corpsmen to require evacuation occurred at the rate of 37 per 1000 men per day. In 1963 the rate was 5.2 and in 1964, 2.4 per 1000.

In retrospective analysis of possible causes for diminished losses in training time in 1963 and 1964 it

appeared that in these years there had been intensive, preliminary training of troops in the proper use of water and salt in the desert. In staff planning the supply and distribution of water and salt were stressed as a paramount responsibility of command at all levels.

Based on the datum that a man, walking at 3.5 mph in air with temperature of 110 degrees F., will lose a quart and a half or a canteen and a half of sweat every hour (1), containing about 0.2% of salt, a minimum planning factor for drinking water was set at 3 gallons

* A reserve officer on Annual Field Training in 1963 and 1964 as senior medical officer, USMCR Desert Field Exercises 1-63 and 1-64 at Twentynine Palms, Calif.

per day per man and troops were instructed to consume six salt tablets a day in addition to salting their food heavily. They were trained to carry two canteens, to refill them as often as possible, and to drink from them freely and often even if they were not thirsty. Natural thirst can be shown (1) to cause men under these conditions to drink only two thirds of the water they need in order to maintain maximum combat efficiency.

The 1963 and 1964 exercises supported findings in previous experiments (3, 4) that physical conditioning, combined with acclimatization, cuts down the rate of heat casualties. A total of 22 had to be evacuated in 1963 and 5 in 1964. None of these occurred among simulated enemy troops who had spent the preceding first week of Annual Field Training performing vigorous reconnaissance on foot throughout a large area of hilly desert. The simulated friendly forces, among whom all the heat casualties occurred, had spent the week before the exercise undergoing training in circumscribed localities on level ground with plenty of motor transport.

Natural acclimatization, well recognized as influencing the incidence of heat casualties (5, 6) probably was the cause of the difference in incidence of heat casualties between 1963 and 1964. In 1963, the Reservists came from New England and the Lake States. The rate of evacuation was 5.2 per 1000 per day. In 1964, when most of the Reservists were from either Louisiana or Utah, the rate was 2.4.

Among a majority of victims who were questioned, a history of previous shortage of water, salt, food or all three could be elicited.

At battalion aid stations or the field hospital, treatment consisted of rapid evaluation, rapid rehydration and gentle but rapid cooling. To accomplish the latter, men were undressed and put in the current of electric fans or in air conditioned mobile dental or surgical

operating rooms and cool moist cloths were applied to their bodies. Sudden application of ice or ice-cold cloths appeared to cause severe discomfort and agitation.

Rehydration by intravenous infusion of normal saline solution under the supervision of medical officers was accompanied by rapid recovery in all cases treated in 1963 and 1964. In the absence of professional supervision or under conditions of shortage of intravenous fluids, it is believed that satisfactory treatment of dehydration might consist of oral administration of large amounts of pre-salted (0.1%) water and other beverages, cooled if possible. This contains about half the salt content of unacclimatized sweat, but cannot be tasted and does not cause gastric irritation (2).

Experience in these three desert field exercises appeared to confirm the findings of previous observers (1) that "man's chief concern in the desert is to have available as much water as he needs to replace all that he evaporates as sweat" and that natural thirst leads men under these conditions to drink only about two thirds of the water they need. Acclimatization appeared to reduce the incidence of heat casualties and the effect of acclimatization seemed to be enhanced by simultaneous physical conditioning. The applicability of advice contained in Marine Corps Order 6200.1A(7) was again shown.

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MEDICAL FRONTIER*

Louis E. Adams HM1 USN, Laboratory Department, Station Hospital, Navy #214,FPO, New York, N. Y.

Americans go abroad as tourists or as members of the Armed Forces to return home, in most cases, with a maturity and concern they had not previously possessed. Many of our people leave for other countries not fully aware that they are acting as ambassadors in presenting our way of life to other people of the world. Often they are exposed to a mode of life considerably different from their own, but not necessarily better or worse. Only through humility, knowledge, and understanding of what exists in the non-American world can Americans hope to attain a climate of mutual respect.

As eager travelers preparing an itinerary for our few precious weeks or possibly months abroad, we gather all sorts of information about the climate, the best

restaurants, and the most beautiful and exotic places of interest. This information is usually available in travel folders and brochures, but sometimes it is supplemented by a friend who has already made the trip. Despite our adroitness in making our plans, we seldom look into the problem of disease prevalence and sanitary conditions other than making sure that our basic immunizations meet the requirements. People who have little or no knowledge of the medical standards and requirements

* The writer takes this opportunity to acknowledge his indebtedness to Joseph F. Britton LCDR MC USN, for unfailing aid, counsel, and encouragement through the preceding year. Thanks are also due to Arthur King CDR MSC USN, and Joseph R. Baranski HMCS USN, of Preventive Medicine Unit #7, Naples, Italy, for the confirmation of the bacteriological results presented in this paper.

established by the Public Health Service of our own country may fail to realize that we are living in an environment all our own, isolated by two oceans. Having received all of our shots, we leave America feeling quite safe. The toll from pneumonia, tuberculosis, influenza, smallpox, typhoid, and other bacterial and viral diseases has been drastically reduced through enforced immunization procedures and usage of new drugs. This has been done to the extent that we forget these entities are a threat when we move from our relatively isolated and protected environment.

This false sense of security was carried to the United States Naval Air Facility, Kenitra, Morocco by the vast majority of personnel. The knowledge of the health problems and sanitary conditions of the country could be obtained only after arrival. Even with the well presented orientation lectures by the Medical Department Representative, a great number of people contracted gastrointestinal disorders. The following report is presented to exemplify this problem.

The chief complaints of hundreds of patients who reported to this Naval Air Facility seeking care were those of diarrhea, nausea and/or vomiting for the preceding two or three days, accompanied by temperature ranging from 97 to 103 degrees Fahrenheit. In each case an examination was performed by a physician and a stool culture was obtained before starting the patient on chemotherapy. Initially, treatment varied with the

physician. Some used tetracycline, others chloramphenicol and sulfonamides with proper hydration. Specific antibiotic therapy appeared to give the best results. See Figure 1, "In-Vitro Sensitivities of Enteric Pathogens." Some physicians, however, felt that symptomatic treatment might be best in the long run inasmuch as this perhaps offers an opportunity for the patient to develop a degree of immunity.

Most patients responded very well to treatment and the clinical manifestations of the diseases disappeared after a period of 5 to 7 days. In the case of small children, dehydration and electrolyte imbalance were more critical and less tolerated than in the adult. Several children were hospitalized and one death occurred due to the loss of fluids through vomiting and chronic diarrhea. All patients as well as station personnel were reminded of the health hazards of drinking the local water and eating improperly prepared food from restaurants in the towns surrounding the Naval Air Facility and other areas in Morocco.

In cases of diarrhea caused by *Salmonella* and *Shigella*, the enteric pathogens were initially present as the predominant organisms in the stool and as the symptoms subsided the number of pathogens rapidly decreased and were isolated with difficulty or not at all.¹ Laboratory results of the rectal swabs and stool cultures are represented in figure 2.

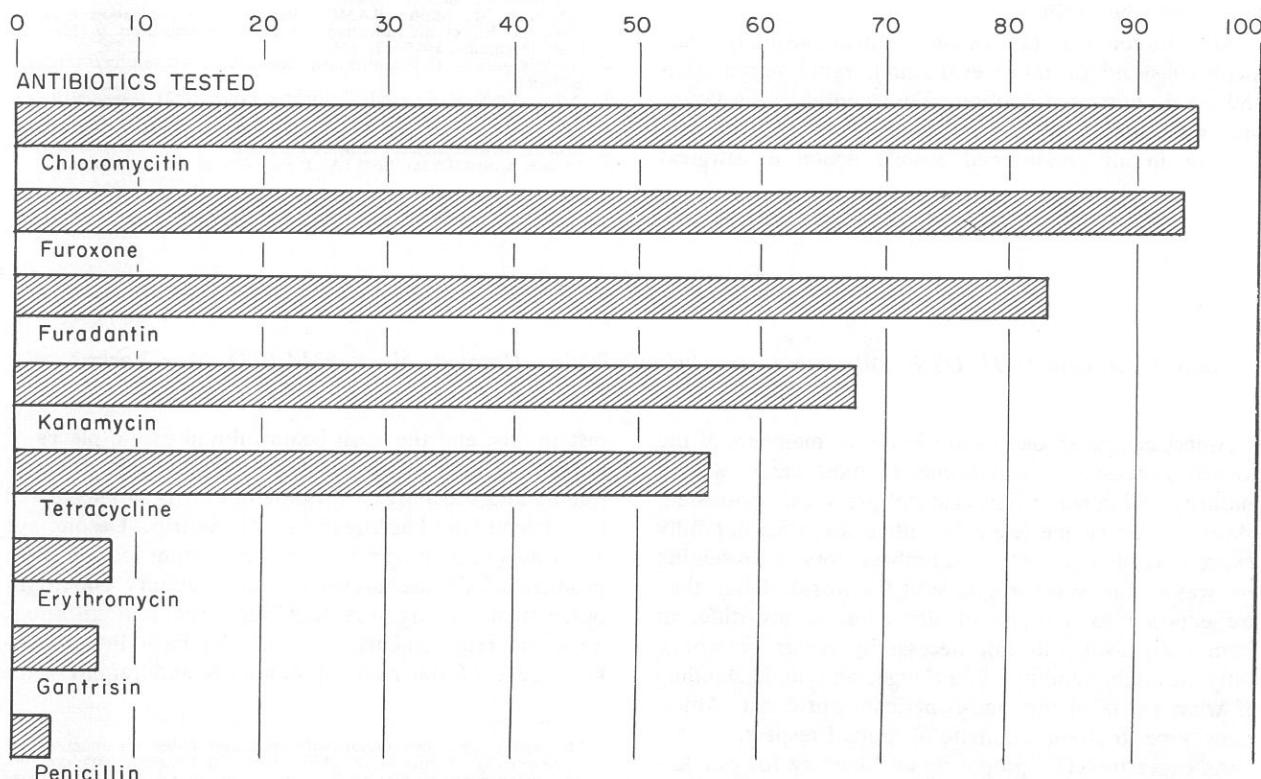


Figure 1. In-vitro sensitivities of enteric pathogens

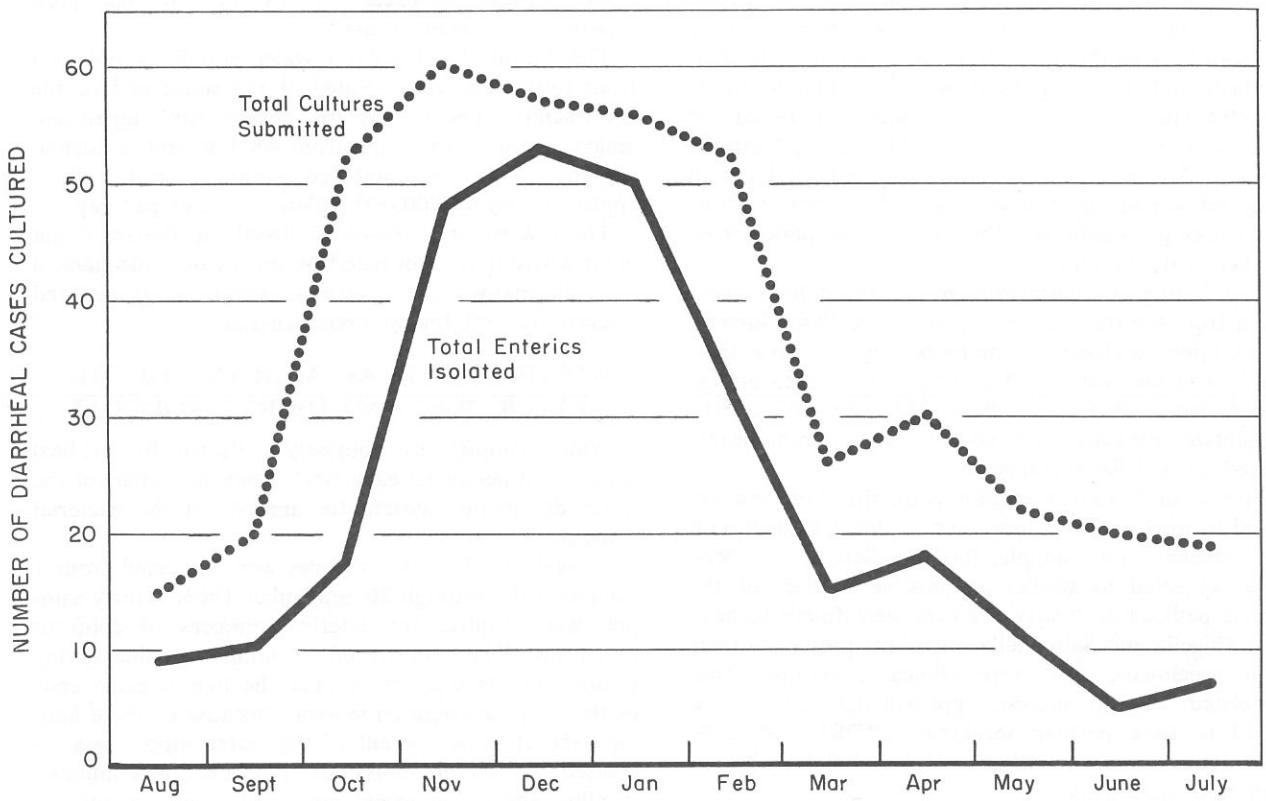


Figure 2. Laboratory results of rectal swabs and stool cultures (August 1, 1962 – July 31, 1963)

SOURCES OF INFECTION

Personnel reporting for duty at this military base frequently found that it was necessary to seek housing for their families in the nearby towns and local communities in Morocco, due to the lack of sufficient housing on the military compound. Living in the village of Kenitra or other local communities is fine for the "People to People" program and getting to know your Moroccan hosts, but one soon finds that the standards of personal hygiene and sanitation are extremely low and unacceptable to us. Animal and human defecation occurs in the streets, vacant lots, or nearby fields, attracting flies that harbor on foodstuffs which are generally unprotected by screens.

Most American families purchase fruits and vegetables from the local market place, finding it difficult to resist their extraordinary quality in regard to size and flavor. These fruits and vegetables of course are contaminated by the flies which are excellent vehicles for transmission of the Shigella and Salmonella organisms. The Moslem habit of "Ablution," washing the anus with water and using no toilet paper after every defecation, plus the lack of soap and the sparse quantity of water used, makes direct finger contamination a likely cause of Shigella and Salmonella organisms on fruits and vegetables. It is therefore recommended that all produce be soaked in a chlorine type solution (two

teaspoonfuls per one gallon of water) for 30 minutes to render it fit for consumption.

Many animals are susceptible to Salmonella infections and thus act as a reservoir for this group of pathogens and the organisms may in turn be transferred to man.

Eggs may become infected in the ovary or oviduct before the shell covering is added; or, penetration of the fresh intact shell covering by micro-organisms derived from feces, manure or soil, may occur.² Pasteurization of milk is not mandatory in Morocco and the consumption of non-pasteurized milk and milk products or eating other food that is contaminated due to improper handling is a common source of enteric pathogens.

The use of untreated, contaminated water for brushing teeth or for bathing small children is another means by which enteric infections are contracted. Even with close observation, small children can consume varying quantities of water while splashing about in the bathtub. It was recommended that only steaming hot water be drawn into the bathtub, allowing it to cool to the temperature that will permit the bathing of children. The enteric bacteria are killed by the temperature at which most domestic hot water heaters operate.

Attention to the hygiene of breast feeding and the preparation and handling of food for small children is also very important. Cases of enteric diarrhea have

been reported among patients in hospital wards. In obstetrical wards and nurseries this has been a major problem with newborn children "rooming in" with their mothers and acquiring what was first thought to be infantile viral diarrhea, but later proven to be caused by an enteric organism. In the NAF Station Hospital, Kenitra, Morocco, stool cultures are collected on all pregnant women upon admission to the obstetric wards in an attempt to anticipate the cross-contamination from mother to the newborn.

The finding of enteric pathogens, when cultures were taken from the toys and play pens at the Base Nursery, necessitated advising all mothers not to leave their children in the Nursery, if a child had diarrhea or was under treatment for diarrhea. This was one of the preventive measures to control the communicable Shigellosis and Salmonellosis.

Moroccan Nationals employed on the Base and engaged in work which brings them in direct contact with our personnel, for example, food handlers and barbers, were subjected to studies as possible carriers of the enteric pathogens. Thirty per cent were found to have both *Shigella* and *Salmonella* organisms present in their stool specimens. All were clinically asymptomatic. Unrelated, but of interest, approximately 22% were found to have positive serologies (VDRL) and 20% were found to have pathogenic ova and parasites in their stool specimens.

WATER SUPPLY

Water samples, collected off base from the water taps in homes of American families living in the town of Kenitra, were cultured in the Hospital Laboratory with the resultant isolation of enteric pathogens and coliform organisms. Surveys on the part of the Hospital's Sanitation Department revealed that the water company chlorinated the water at the source. However, it is believed that the water became contaminated after leaving the plant. This is due to faulty piping arrangements beneath the streets and improper maintenance of the plumbing. Water distribution and sewage disposal pipes are installed side by side under the streets and waste material leaks from the sub-standard, mud filled joints of the sewage system water lines, thus contaminating the water.

The use of water from the shallow surface wells located at the base of the slopes or hills was not recommended, since these wells are not covered to protect against contamination. Human and animal fecal material deposited on the hillsides above the wells is washed into the open wells when the "Seasonal Rains" begin. There are two seasons in Morocco: the first being the hot, dry summer and the second the rainy period. The increase of diarrheal diseases during the rainy period is represented in Figure 2.

As a matter of interest, rainfall during the period ending January 1963 caused the Sebou River to overflow, resulting in the flooding of the area around

Kenitra, Morocco, exceeding anything that had been experienced in many years.

The Naval Air Facility's water supply is obtained from four deep wells located at the south end of the Air Facility. These wells are satisfactorily capped and sealed to insure protection from flooding and accidental contamination. The combined output of these wells is approximately 17,000,000 gallons of water per day.

The raw water is delivered directly to the treatment plant where it is chlorinated by means of a mechanical gas chlorinator. The water is stored in an elevated reservoir or tank for use upon demand.

BACTERIOLOGICAL ANALYSIS OF THE WATER, ICE, AND DAIRY PRODUCTS

Water samples are routinely collected by medical department personnel each week from the outlets of the water distribution system for analysis of the bacterial content.

A total of 237 water samples were collected from 1 January 1963 through 30 September 1963. Thirty samples were positive for enteric pathogens or coliform organisms. The majority of the sampling points giving positive results were at or near the two extreme ends of the water distribution system. Because of these findings, the chlorine content of the water supply was increased and a continuous flow procedure was initiated to allow the water containing an adequate amount of chlorine to reach the infrequently used outlets at the "dead ends" of the water system. Other positive water samples, collected from the outlets more frequently used and near the central section of the water system, were attributed to "outside spigot" contamination. The chlorine content of the water, simultaneously tested during the bacteriological collection, supports this conclusion, inasmuch as the chlorine residual was consistently within allowable limits.

Each week a sample of ice from the ice plant was collected and submitted to the laboratory for determination of the bacterial content. *Shigella* was isolated several times. This ice was used by personnel living aboard the station. In attempting to find the source of the contamination, a stool culture was obtained from the employee who operated the ice manufacturing plant. The results of the culture revealed that the worker did carry *Shigella*. The employee was removed from work at the ice plant and placed on antibiotic therapy. Following treatment, repeated cultures were negative for *Shigella* and the employee was allowed to return to work. Bacterial analysis of the ice samples were negative thereafter.

COLLECTION OF WATER SAMPLES

The water samples analyzed by the Hospital Laboratory followed the procedures as outlined in Standard Methods.*

* Standard Methods for the Examination of Water, Sewage and Industrial Wastes, prepared by the United States Public Health Service.

The water is collected in a sterile bottle containing 0.5 ml of 1.5% sodium thiosulfate. After collection of the water, the samples are taken to the laboratory and a 10 ml sample is aseptically inoculated into five large potato tubes of lactose broth. (Each tube contains an inverted Durham tube for the detection of gas formation). The inoculated tubes are incubated at 35 degrees \pm 0.5 degrees and examined at the end of 24 \pm 2 hours and again at the end of 48 \pm 3 hours and if gas has formed in the fermentation tube, this constitutes a positive Presumptive Test. The absence of gas formation at the end of 48 \pm 3 hours incubation constitutes a negative test.

All primary fermentation in the Presumptive Test showing any amount of gas at the end of 24 hours incubation is subject to the Confirmed Test.

The Confirmed Test is done by transferring small portions by the use of a wire loop into a tube containing brilliant green lactose bile broth. The inoculated brilliant green lactose bile broth is incubated for 48 \pm 3 hours at 35 degrees \pm 0.5 degrees. The formation and presence of gas in any amount in the inverted Durham tube of the brilliant green lactose bile broth at any time within 48 \pm 3 hours constitutes a Confirmed Test.

Samples containing growth and gas are subcultured on the media as outlined in the part of this writing entitled "Laboratory Procedure for Isolating Enterics."

DAIRY PRODUCTS (SOURCE AND FINDINGS)

Prior to August 1964, milk (recombined), cottage cheese, buttermilk and cream were purchased for sale in the commissary store and for use in the general mess, from the dairy plant in Casablanca. This plant, using dried fat-free milk and butter produced in the United States, manufactured the products mentioned. Ice cream, powdered milk, condensed milk, frozen milk, various cheeses, sherberts, and soft drinks produced in the United States, are also available in the commissary and are used in the general messes.

Bacterial analysis of the U.S. manufactured products have shown them consistently free of pathogenic organisms and to conform to U.S. Public Health Service and federal specifications for such products. On the other hand, the milk and milk products from the Casablanca plant have shown the presence of Shigella and/or Salmonella on several occasions. Because of inability to produce a suitable product, the contract with the dairy in Casablanca was terminated. The bacteriological results reported in this paper have been confirmed by the bacteriology section of the U.S. Naval Medical School, NNMC, Bethesda, Maryland, and the bacteriological laboratory of the U.S. Navy Preventive Medicine Unit #7, Naples, Italy.

LABORATORY PROCEDURES FOR ISOLATING ENTERICS

Basic differentiation of gram negative bacilli is a complex routine which requires strict adherence to established procedures and careful interpretation of the reactions.

At this Station Hospital Laboratory cultures suspected of containing Shigella or Salmonella are inoculated in Selenite F medium, MacConkey's medium, Tetrathionate Broth, Salmonella and Shigella medium.

After overnight incubation at 37 degrees C., the selected clear, colorless colonies are transferred to Kleigler's Iron Agar Slants by streak and stab. After incubation, those tubes showing alkaline slants and acid butts with or without gas and with or without Hydrogen Sulfide (H₂S) productions, are transplanted to urea medium, Methyl Red-Voges Proskauer (MR-VP) medium, SIM medium, Nutrient agar, Citrate medium and fermentation tubes of glucose, lactose, sucrose, mannitol, ducitol and salicin. The differentiation of the enteric organisms is accomplished as outlined in the Biochemical Chart for Enterics in Figure 3.

SALMONELLA

The Salmonella bacilli are gram negative, usually motile, non-encapsulated, nonsporing, nonpigmented rods. They are urease negative, methyl red positive, Voges Proskauer negative, indol negative, and usually Hydrogen Sulfide positive. All but *S. typhi* and *S. gallinarum* ferment glucose with the production of acid and gas.³

A potent endotoxin is liberated from these gram negative bacilli when ingested by man. The organism or its toxins may enter the tissues through the intestine by way of the lymphatics, clinically presenting symptoms as fever, acute gastroenteritis, or a localizing type of infection in one or more organs, sometimes causing septicemia.

Infection of the intestine is characterized in severe cases by frequent stools containing blood, mucus, and pus, and is accompanied by malaise, cramps, and mild fever. A positive blood culture is not uncommon during the first week of the infection.

Salmonella bacilli may establish themselves in the tissues of the patient, producing a permanent carrier state after recovery from the acute infection.

A small percentage of individuals, following recovery from a Salmonella infection, continue to carry the organism in the intestinal tract, especially the gallbladder, for months or even for years.⁴

Transmission results from drinking water or milk contaminated by the Salmonella organism, eating food that has become contaminated by infected food handlers or insects such as cockroaches and flies. A person with a subclinical infection, "carrier", may contaminate food-stuff that is to be consumed. (See "Source of Infection" in writing.)

BIOCHEMICAL CHART FOR ENTERICS

| MEDIUM | SHIGELLA | | | | SALMO- NELLA | | PARACOLO BACTRUM | | | | PROTEUS | | | | | | |
|----------|----------|------------|------------|------------------|-----------------|-----|------------------|------|-----------|-------|-------------------|-------------------|-------------------|--------|----------|-----------|---------------------|
| | E. COLI | E. FREUNDI | A. CLOACAE | KIEBSIELLA | A. | B. | C. | D. | A-D GROUP | TYPHI | ARIZONA | BETHESDA | PROVIDENCE | HAFNIA | VULGARIS | MIRABILIS | MORGANI |
| K SLANT | A | A | A | A | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Neg |
| I BUTT | AG | AG | AG | A(G)* | A | A | A | A | AG | A | A-AG | A-AG | A-AG | A-AG | AG | AG | A |
| A H2S | Neg | Pos | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Pos* | Pos | Pos | Neg | V | Pos* | Pos | Neg Neg |
| MOTILITY | Pos* | Pos* | Pos* | Neg | Neg | Neg | Neg | Neg | Pos | Pos | Pos | Pos | Pos | V | Pos | Pos | Pos |
| CITRATE | Neg* | Pos | Pos | Pos | Neg | Neg | Neg | Neg | Neg | Pos* | Pos* | Pos | Pos | Pos | Neg* | Pos* | Neg Pos |
| INDOL | Pos* | Neg* | V | Neg | V | V | V | Neg | Pos | Neg | Neg | Neg | Pos | Neg | Pos | Neg | Pos Pos |
| UREA | Neg | Neg | Neg | Pos ¹ | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Pos | Pos | Pos |
| GLUCOSE | AG | AG | AG | A(G)* | A | A | A | A | AG | A | A-AG | A-AG | A-AG | A-AG | AG | AG | AG A |
| LACTOSE | AG | AG | AG | A(G)* | Neg | Neg | V | A* | Neg | Neg | A-AG ¹ | Neg* ¹ | Neg* | Neg | Neg | Neg | Neg Neg |
| SUCROSE | V | V | AG | A(G)* | Neg | Neg | Neg | Neg* | V | Neg | Neg | V | A-AG ¹ | V | A-AG | AG | Neg* A ¹ |
| MANITOL | AG | AG | AG | A(G)* | Neg | A* | A | A | AG | A | A-AG | A-AG | Neg* | A-AG | Neg | Neg | Neg A |
| DULCITOL | V | V | V | V | Neg | Neg | Neg | Neg | V | AG* | A ¹ * | Neg | V | Neg | Neg | Neg | Neg Neg |
| SALICIN | V | V | AG | A(G)* | Neg | Neg | Neg | Neg | Neg | Neg | Neg | V | Neg* | V | A-AG | AG* | Neg* Neg A* |
| KCN | Neg | Pos | Pos | Pos | Neg | Neg | Neg | Neg | Neg | Neg | Neg | Pos | Pos | Pos | Pos | Pos | Pos |

Legend: Neg* = usually negative

Pos* = usually positive

V = variable

L = late—48 hrs to 10 days

A(G)* = usually acid plus gas always acid.

FIGURE 3

SHIGELLOSIS

Shigella bacilli are gram negative, aerobic, non-motile, non-sporulating rods. As with the Salmonella species, the Shigella suspected specimens should be inoculated into the same media as described under "Laboratory Procedure for Isolating Enterics". The Shigella group ferments dextrose with acid production, but very rarely produces gas. Salicin and dulcitol are not fermented and citrate is not utilized. Urea is not hydrolyzed and hydrogen sulfide is not produced. Indol may or may not be produced. Nitrates are reduced to nitrites.

The organism Shigella is limited to an inflammatory process that involves the large bowel and occasionally, the terminal ileum. Acute ulceration and hemorrhage of the bowel wall may occur in severe cases. Bloody stool specimens are usually obtained in these cases, also. Fever results from the absorption of toxic products from the gut.²

Patients who recover from Shigella may become chronic or intermittent carriers, and those individuals with occult infections and sub-clinical symptoms constitute a major problem in the control of the disease.

The genus Shigella is divided into four primary groups, i.e. A, B, C, and D. These correspond respectively with *S. dysenteriae*, *S. flexneri*, *S. boydii*, and *S. sonnei*.

Serologic identification can be made by testing the dominating somatic factors based on biochemical as well as serological differences. The organisms may be

broken down into many sub-groups based largely on antigenic patterns. All of the Shigella groups are pathogenic for man and there is no other recognized animal host.

Station Hospital Laboratory, Kenitra, Morocco is using Shigella and Salmonella typing and grouping sera obtained by the Navy through the Federal Stock Catalog. Note: (For carbohydrate reaction see chart entitled Biochemical Chart for Enterics). Variations of the carbohydrate reaction are described by Edwards and Ewing.¹

REMARKS

Identification of Shigella and Salmonella serotypes, because they require a large number of single factor typing serums, can seldom be done in a small laboratory or outside a specialized unit.

Due to the widespread distribution of Salmonella bacilli in many animals and the many avenues for their dissemination to man, it can be accepted that multiple infections by these organisms have occurred in the patients seen and treated at this medical facility. The knowledge of the occurrence of these organisms in animals, in animal products, and in commercial food preparations is vital to the control of the disease.

Studies have been made of the role played by the liver in filtering intestinal bacteria from the blood. Not infrequently, Salmonella have been reported isolated from patients having liver damage. It may well be that this bacillus is the etiological agent in many cases of

so-called viral hepatitis seen by the physicians at this hospital.

Salmonella and Shigella organisms may be described as exhibiting the attributes of the perfect parasite in that they guarantee their own survival and propagation without killing the host. The organisms appear to be adequately deployed against man's medical and culinary processes, perpetuating their superior role in the co-existence they enjoy with the animal kingdom.²

Many cases of enteric infections seen at the Station Hospital could probably have been traced to carriers and undiagnosed cases of the diseases. Another factor which undoubtedly contributed to the increased incidence of diarrheal diseases during the winter of 1962-63, was the abnormal amount of rainfall which resulted

in the Sebou River flooding rather large areas around Kenitra.

This account of the occurrence of diarrheal diseases in the military and dependent population of an overseas Naval Activity is presented in the hope that Medical Department personnel will be made more aware of certain problems with which they may be confronted on assignment to overseas duty.

References

1. P. R. Edwards and W. H. Ewing, Identification of Enterobacteriaceae, P. I. Copyright 1955.
2. Paul H. Black MD, Lawrence J. King PhD, and Morton N. Swartz MD, Salmonellosis—A review of some unusual aspects. *N Eng J Med* 262(18):921-926, May 5, 1960.
3. Bacteriology Manual, U.S. Naval Medical School, NNMC, Bethesda, Md. (1961 Edition)
4. Control of Communicable Diseases in Man. Pgs. 162-164, 9th Edition, 1960.

TELEVISION VIEWING

New York (N. Y. (NAVNEWS)—Two Pediatricians with the Air Force Medical Corps have contributed a new dimension to the discussion about television's harmful effect on children when it is viewed excessively. The standard response of many broadcasters to studies indicating that moppets spend inordinate blocks of time in front of the small screen has been advice to parents. "Regulate your child's viewing," the broadcasters have in effect urged. "Select his programs, discriminate. The responsibility is yours."

It appears now that certain parents are unable to regulate their own television habits and that this weakness is directly responsible for illness in their children. Captains Richard M. Narkewicz and Stanley N. Graven reported recently on the "tired-child syndrome" which they found among 30 children brought to hospitals at Lackland Air Force Base in Texas and Fairchild Air Force Base near Spokane, Washington. The children ranged in age from three to 12 years. They exhibited symptoms of anxiety conditions: chronic fatigue, loss of appetite, headache, and vomiting. The parents made no mention of their children's television habits, but after questioning the families the pediatricians discovered that the patients were spending an average of three to six hours in front of television screens on weekdays and six to 10 hours on Saturdays and Sundays.

The parents were told to stop their children's television viewing completely. In 12 of the 30 cases in which the instructions were fully followed, the symptoms vanished within two to three weeks. The other 18 children were allowed to watch television as much as two hours a day, and they were free of symptoms in three to six weeks. The doctors followed up the families, however, and found, in some cases that the children were again suffering from severe symptoms of the "tired-child syndrome." Once again they were watching television excessively. Their parents, particularly the fathers, were unwilling to forego evenings in front of

the television, and the children were caught up in the viewing vortex.

Appeals to parents who are capable of disciplining themselves may be effective when they are asked to regulate their children's viewing. But what is to be done with parents who are themselves television addicts?—(Saturday Review)—NAVNEWS, January 1, 1965.

COCKROACH—OLD AND TOUGH

Before you grind that next cockroach under your heel, spare a thought for this remarkable little fellow who has outlived even the dinosaurs. Of all creatures who lived 200,000,000 years ago, only the cockroach has survived virtually unchanged.

Although his favorite food is beer, he will eat anything—hair brushes, shoe polish, paper, rags or aspirin. And if he has to, he can go for 76 days with no food at all. Besides that, if he loses a leg or a nose, he grows a new one.

All of which doesn't make him one bit more lovable.—"Gator" Scope, USNH, Jax., Fla., 3(11): 2, Oct. 28, 1964.

TEACHING OF PREVENTIVE MEDICINE IN EUROPE

Progress in the teaching of the preventive aspects of medicine in European medical schools over the past 10-15 years was discussed at a Symposium held from 22 to 30 July 1964 in Nancy, France, by the WHO Regional Office for Europe. The aims and scope of such teaching were reviewed, together with ways and means of improving it.

Specific topics included: the teaching of preventive medicine in connection with the preclinical and clinical sciences, pathology, microbiology, and psychology; the place of statistics and epidemiology in such teaching; and the role of special chairs of preventive and social medicine.

The Symposium was attended by some 30 participants from countries in the European Region, and by representatives of several international organizations.—WHO Chronicle 18(8): 311, August 1964.

FROM THE NOTE BOOK

LIMITED DUTY RECOMMENDATIONS BY BOARDS OF MEDICAL SURVEY

The purpose of returning a member to a period of physically limited duty is to afford the member sufficient time to convalesce from a serious illness or injury with the expectation that—at the end of the period of limited duty—the member can be restored to a full duty status. In most cases, BuMed considers that the *recommended limited duty period* should not exceed six months and it is only in exceptional circumstances that BuMed will concur in a board of medical survey recommendation for a period greater than six months. (Exceptions would be cases involving tuberculosis and certain special study cases).

Whenever an enlisted member appears before a board of medical survey and the board recommends return to limited duty, the member is immediately reported as available for assignment to the appropriate Enlisted Personnel Distribution Office (EPDO) as prescribed in para. 21.72c Enlisted Transfer Manual. If the board's recommendation is for limited duty of six months or less, the EPDO normally assigns the member to an activity near the place of hospitalization in a temporary duty status and if necessary in excess of the activity's authorized allowance. In such cases, travel costs are minimal. However, if the board's recommendation is for limited duty in excess of six months, the EPDO must issue permanent-change-of-station orders and the member must be assigned within an activity's authorized allowance. If an authorized allowance billet is not available at an activity near the place of hospitalization, the member must be ordered elsewhere—perhaps to a far distant activity and at considerable expense to the Government for the member's travel, for his dependents' travel, and for the dislocation allowance payment. *But the need for permanent change of station orders with attendant travel and dislocation costs exists only when the board of medical survey recommends limited duty in excess of six months.* If BuMed should later modify the board's recommendation to provide for limited duty of six months or less, the transfer action-in-retrospect appears unwarranted and wasteful.

In summary it appears most desirable that—except under very exceptional circumstances—boards of medical survey should not recommend assignment to limited duty for periods in excess of six months. However, at

the end of the six month period and following adequate re-evaluation, the Board of Medical Survey may recommend an additional period of limited duty, if such appears necessary and appropriate.

—From: Physical Qualifications and Medical Records Division, BUMED.

YOUR WILL

By R. W. Andre ADJC

Norfolk, Va. (NAVNEWS), 1 Feb 1965 . . . Some people fail to execute a will while others, at one time or another, have good intentions but fail to carry them out. Only a few are ready for the unexpected. The below information reflects what may happen if you do not leave a valid will:

1. Your family may find itself unnecessarily involved in certain court procedures.
2. Your knowledge of the property you own and your advice as to its disposition cannot be passed on for it dies with you.
3. You lose the privilege of naming your executor and this may be a costly loss.
4. You lose the privilege, afforded by laws in most states, of naming a guardian for your minor children. This is vital, particularly if your wife should not survive you.
5. In some instances, if there is no immediate family, your failure to leave a will may result in the passage of your property to persons in whom you have no particular interest; or even in its escheat (transfer) to the state.
6. Settling your estate is likely to be more complicated and may prove more costly.
7. You lose the opportunity to minimize estate and inheritance taxes. This can often be done by a planned will.

In contrast, a will gives you the advantage of specifying:

To whom your property should go. When it should go. In what amounts it should go. How it should be safeguarded. By whom it should be handled.

The Executor: The executor is a person or qualified corporate judiciary (bank or trust company) you name in your will to settle your estate after you have gone. Choose your executor carefully, not on the basis of friendship or relationship alone, but on the basis of competence and ability to handle money matters.

Remember: If you die and leave no will, you are said to have died "intestate". In effect, the state in which you live makes your will for you. Your property is distributed in accordance with fixed provisions of the state law. No matter how small or large your estate, not leaving a will may cause much trouble and inconvenience for your survivors. If the husband dies, the wife, under the laws of many states, will receive only one-third of the husband's estate if there is no will. The children in this case, inherit two-thirds and if they are minors, a guardian will have to be appointed by the probate or surrogated court. In all likelihood, the wife will be named that guardian; yet, she will be anything

but a free agent in handling of the children's money. She will have to provide a bond, be under constant supervision of the court, and file accountings periodically. Guardianship is generally an expensive and cumbersome procedure and can be avoided by a properly drawn will.

Be sure your estate will be handled as you wish—see your attorney or Legal Assistance Officer as your legal advisor and consultant when taking care of such important matters. (It is also highly important that your wife have an up-to-date and valid will).

Once establishing a will, it is important to review and update the vital document at regular intervals.

POSTGRADUATE SHORT COURSES FOR MEDICAL DEPARTMENT OFFICERS SPONSORED BY THE DEPARTMENT OF THE ARMY DURING FY 1965

CHANGE IN SCHEDULE

| <i>Course</i> | <i>Installation</i> | <i>Date</i> |
|------------------------------|---|------------------------|
| Walter Reed General Hospital | Armed Forces Institute of Pathology | 5 Apr - 28 May |
| Otolaryngology Basic Science | Washington, D. C. | 1965 |
| Surgical Nursing Course | Walter Reed Army Institute of Research | 29 Mar - 2 Apr 1965 |

This article supersedes announcement in Medical News Letter 44(8), 23 October 1964.—Training Branch, Professional Division, BUMED.

OAK KNOLL CONDUCTS CHILDREN'S PREVENTIVE DENTAL HEALTH PROGRAM

In observance of the Seventeenth National Children's Dental Health Week 7-13 February, the Dental Service at U.S. Naval Hospital, Oakland, conducted a preventive dental health program during the month of February.

Oak Knoll military staff children from 4 to 16 years old were considered eligible for the program, which included bite-wing x-rays, clinical examination, oral hygiene instructions, cleaning and polishing of teeth, and surface application of stannous fluoride to prevent decay. The fluoride treatment was given only with parental permission.

Parents were told just what treatment their children required and were given information concerning proper care of their children's teeth.

Each child received a tooth-brushing kit—provided through funds contributed by the Oak Knoll Officers' Wives Club.—Submitted by RADM Harold J. Cokely MC USN, Commanding Officer, U.S. Naval Hospital, Oakland, California and DMO, 12th Naval District, San Francisco, California.

SURGEON GENERAL ASKS FOR MAXIMUM SUPPORT OF SECNAV TASK FORCE BY MEDICAL DEPARTMENT

On 22 December 1964 the Secretary of the Navy directed the establishment of a Task Force to identify and examine major factors bearing on personnel retention in the Naval Service. The Bureau of Medicine and Surgery is represented on this Task Force and it is the desire of the Surgeon General to provide maximum support through our representative to the total effort of the Task Force and therefore in turn to provide maximum assistance to the Secretary of the Navy in attempting to solve the Navy's personnel retention problems.

Comments, suggestions and any pertinent information which relates in any way with the identification of major factors which have potential for improving retention are solicited and should be forwarded to:

SecNav Task Force on Military Personnel Retention
Room 3732, Arlex
Navy Department
Washington, D. C. 20370
Attn: Medical Representative

It is increasingly recognized that the hospital alone, and particularly the general hospital, cannot provide adequate clinical training for the medical student. It is suggested that future physicians would greatly benefit from supplementary training in health centres and field training areas.—WHO Chronicle 18(11): 423, November 1964.

DENTAL SECTION

EXCERPTS FROM THE REPORT OF THE COMMITTEE ON SCIENTIFIC INVESTIGATION OF THE AMERICAN ACADEMY OF RESTORATIVE DENTISTRY

Ralph W. Phillips DSc, Chairman, Committee members: Drs. Joseph F. Volker, Arvin W. Mann, Clyde H. Schuyler, and Henry M. Tanner. Indiana University, School of Dentistry, Indianapolis, Ind., Jour Pros Den 14(3): 554-557, May-June 1964.

DENTAL CAVIES AND RELATED RESEARCH

Oral Microbiology. Dirksen, Little, and Bibby have continued their studies of the pH of carious cavities. Previously they have shown that cavities having thick layers of decay, and small openings to the surface, had low surface pH values. Their observations have been extended to include the pH measurements at different depths in isolated cavities. A progressive decrease in pH between the surface and the bottom layers of the cavity has been noted. The average pH of 31 cavity bases in this category was 3.88 as contrasted with an average surface pH measurement of 4.91. These findings give strong support to the primary role of bacterially-produced acids in the initiation and progression of the carious lesion.

The clinical usefulness of the bacteriologic control in endodontic therapy has been questioned by some clinicians. This point has been investigated by Zeldow and Ingle. They have studied 89 teeth with single canals and nonvital pulps. Twenty-four of these had a negative culture, both at the onset of treatment and at the time of the root filling. Sixty-seven had a positive final culture before filling. Whereas only one failure was reported with the former group, seven were noted in the latter in a 2-year follow-up study.

Systemic Factors and Oral Disease. The effect of civilization on the incidence of dental caries has been vividly illustrated. In Ghana there has been a rapid increase in the extent of tooth decay that parallels the increased consumption of refined carbohydrates. In 1950 the sugar confectionery imports to the country were 943,785 lbs. in contrast to 1960 when the importation of these products was at the level of 5,907,691 lbs. The greatest increase in caries incidence has occurred in Europeanized coastal cities, and within each specific area the incidence of dental caries is greatest in those groups having the highest standard of living and the best access to and utilization of general health facilities. This is presumptive evidence that local rather than

systemic factors are responsible for the production of tooth decay.

Fluoride and Dental Caries. The ability of several oral preparations to limit human tooth decay has been reported for the first time. One of these, an acidulated fluoride phosphate solution, has been investigated. According to the investigators, fluoride in acid phosphate solution is readily taken up by the surface enamel, and the enamel so treated does not etch and is exceedingly resistant to acid dissolution.

The importance of this phenomenon has been demonstrated in two clinical studies. One hundred and fifteen children who were given a single topical application of acid fluoride and phosphate solution each year for 2 years had 70 per cent fewer carious surfaces than a control group of similar size and composition. In the second experiment, 77 children had one side of their dentition exposed to four topical applications of neutral 2 per cent sodium fluoride solution with the other half having the same number of applications of this solution in 0.15 M of orthophosphoric acid. A reduction of more than 50 per cent in new carious surfaces was observed on the side treated with the phosphate-fluoride solution.

Taken collectively these data in children are most encouraging but need corroboration. The system also needs to be tested in adult populations.

Volker and Phillips independently have shown that silicate cements contain soluble factors, presumably fluoride, that may increase the resistance of tooth structure to decalcification. In an extension of these investigations, it has been noted that when freshly mixed silicate cement is applied to a polished enamel surface, that surface is protected against decalcification by acetic acid for as long as 4 hours. It is possible that extracts of silicates are at least as effective as the acid fluoride phosphate solutions of Brudevold in protecting enamel from decalcification or in promoting its remineralization. The extracts of silicates normally contain both fluoride and phosphate ions in acid solution but other trace elements may enhance the protective effects.

DENTAL MATERIALS

Cavity Varnishes. It was pointed out in this review last year that cavity varnishes have two merits. Since the research in 1963 further corroborates those initial observations, these salient factors might be re-emphasized. One is that a properly compounded varnish tends to minimize the leakage that occurs around the restoration. For example, the amalgam restoration does leak rather grossly for the first few days or weeks after insertion into the cavity. Although, as pointed out earlier, the leakage rapidly diminishes with time, the initial leakage could well be the cause for occasional postoperative sensitivity. If, however, a cavity varnish is used, the early leakage is negligible. Comparable results are obtained when a varnish is used with certain other restorative materials. Therefore, when the cavity preparation is deep and maximum protection is required, the use of a cavity varnish is indicated beneath the amalgam, foil, or silicate restoration.

There is evidence that zinc phosphate or silicate cement may be even more acidic, and remain acidic longer, than previously believed. The added insult to the dentin and pulp of this irritant can then be a serious problem whenever the thickness of dentin between the restoration and the pulp is 100 microns or less. The cavity varnish, while not totally impermeable, does aid appreciably in preventing the acid present in this type of cement from penetrating through the thin protective layer of dentin. Naturally, in the deep cavity preparation, both a varnish and a base should be employed.

Amalgam. A clinical survey of 1,425 amalgam restorations has corroborated some of the observations reported last year: (1) marginal weakness is an inherent inadequacy of this type of restoration; (2) coarse-cut amalgam alloy particles produce restorations with surface characteristics inferior to those of fine-cut alloys; (3) comparable clinical restorations may be produced by either mechanical condensation or by firm hand condensation; (4) bulk in itself is not as important a factor for clinical success of the amalgam restoration as previously assumed; and (5) regardless of whether the alloy does or does not contain zinc, a meticulously dry field is necessary for success. To be sure, none of these observations are particularly astonishing but they do represent documented guide lines for the successful use of this most common of all restorative materials.

It is now well established, by both *in vitro* and *in vivo* investigations, that the clinical integrity of this restoration is dependent upon reducing the residual mercury content below 55 per cent. When the mercury of the restoration exceeds this value, an unusually high incidence of marginal breakdown and corrosion will result. Thus, emphasis in newer technology lies in the direction of developing procedures which will minimize and better control the final mercury content. One of the approaches is simply to use less mercury in the original mix. An original alloy-mercury ratio as low as 1:1 may be used, provided the trituration is thorough,

that a small condenser is used, and heavy pressure employed. Although the strength values are comparable to those attained by the conventional 5:8 ratio, somewhat better reproducibility is obtained. Furthermore, and advantageously it seems to this writer, no compromise is permitted in the preparation of the material. A pressure and mulling device for mixing the alloy and mercury also may be satisfactorily used with most alloys. Again, the merit lies in reducing known variables and, in some offices, apparatus such as this may aid in standardizing the manipulative procedure.

Resins. The use of dry heat at elevated temperatures for polymerizing acrylic resin jackets has been investigated. Such a technique has not been shown to improve the physical properties. As pointed out by Ryge, the superior clinical results attained by those who advocate the method may well be explained by the fact that these practitioners are highly motivated and meticulously carry out cavity design, manipulation, and finishing, and emphasize patient education in care of the restoration.

A number of types of resins and processing techniques are employed for the construction of partial or complete dentures. Laboratory and clinical studies continue to determine the differences in accuracy and dimensional stability of these materials and the processing procedures. This year, the literature corroborates previously reported data which indicate that no over-all superiority may truly be claimed for any one material.

Miscellaneous. The evidence accumulates that in the fused porcelain technique, the bond of the porcelain to the gold is a most firm one. Whether the union is a true adhesion, or simply the result of van der Waal forces, is probably only of academic interest. Suffice it to say that the bond is adequate to prevent any leakage between the porcelain and gold alloy. Apparently, the bond is not substantially increased by roughening of the gold casting. The phosphate-bonded investments used in the casting of the special alloys employed with this technique have now been evaluated. The mold must be vented, as these materials are more dense than the conventional gypsum-type investments. The investments do vary in the range of expansion which may be obtained. One of the problems associated with certain of the products is a tendency to develop a surface roughness on the casting when the special liquid is diluted in order to reduce the expansion.

PERIODONTOLOGY

Automatic Toothbrushes. Several earlier reports presented data showing electric toothbrushes to be more effective than their manual counterpart. This conclusion is controverted by recent studies of Ash, Rainey, and Smith. They compared the effectiveness of the two most popular models, the Broxodent and General Electric instruments, with the roll method of hand brushing using a two-row hard, natural bristle brush. According to these investigators their studies were designed to

avoid the "novelty" effect in using an electric toothbrush. This they believed was comparable to the placebo effect. Two groups of patients were studied intensively. One used the manual toothbrush for 60 days before switching to the electric brush for a comparable period. The other group used the reverse order. Mechanical and electrical tooth brushing were found to be equally effective in prevention of dental plaque and calculus. They had similar actions on gingivitis, gingival recession, gingival crevice depth, and the periodontal disease index.

OCCLUSION

Mandibular Movements. Credit for outstanding research on occlusion should go to Hickey of the University of Kentucky and Allison, Woelfel, Boucher, and Stacy of Ohio State University on their studies on mandibular movements in three dimensions.

They conclude that a different condylar position was found for rest position, centric relation, and centric occlusion. The condyle could be held in a retruded position as a hinge opening movement was made. However, no center of rotation could be found in the region of the condyle that would produce an arc similar to the arc of movement of the incisor pin.

A direct lateral movement of the condyle was present in voluntary lateral movements of the mandible. This lateral movement ranged from 4.0 mm in a maximal excursion with no tooth contacts to 0.3 mm during tooth contacts of masticatory function. Here it might be emphasized that the 0.3 mm of lateral Bennett movement, while the teeth are in functional contact, is sufficient as an adjustment of an articulating instrument.

The condyles and the teeth were in the centric occlusion position during swallowing.

The teeth contacted in centric occlusion in seventeen of eighteen masticatory strokes. The pathway of the mandible was guided for a short distance by the inclined planes of the teeth as they approached centric occlusion during mastication. The condyle shifted bodily with the slightest opening of the teeth from centric occlusion. The variation and amount of movement of the condyles, even within the range of the height of the cusps of the teeth, seem to make a freedom of cusp movement in centric occlusion desirable. It appears very unlikely that any articulator can duplicate condyle movements. Occlusion formulated by the functionally generated path of the individual patient might more accurately satisfy individual characteristics.

INSTRUMENTATION AND PULP PATHOLOGY

Pain Control. It has been suggested that the ideal way to solve sensitivity of eroded areas of exposed dentin would be a routine of home care. A dentifrice containing 10 per cent strontium chloride is recommended. The dentifrice is nontoxic, nonallergenic, and nonirritating. It is claimed that the use of this dentifrice pro-

duced significant improvement in 80 of the 86 patients tested.

Corticosteroids. Mosteller continued his clinical observations with the corticosteroids, including limited histologic studies. He states that there is good clinical evidence that the proper use of certain corticosteroid solutions will eliminate or reduce thermal sensitivity in most teeth. This clinical effectiveness has been attributed to the anti-inflammatory action of the corticosteroid. He has made an effort to evaluate histologically, in a limited way, the ability of a prednisolone solution to decrease or eliminate pulpal inflammation under deep cavity preparations. All of the cavities were filled with zinc oxide and eugenol cement. All untreated teeth showed marked inflammatory pulpal changes. In general, the severity of the pulpal injury varied directly with the depth of the cavity preparation. The teeth treated with prednisolone also demonstrated pulpal inflammation, but to a lesser degree. On the basis of these few specimens, this prednisolone solution does not appear capable of completely eliminating pulpal inflammation in response to deep cavity preparation. In those preparations, a base and varnish would still seem to be necessary. More histologic data, done in depth, is needed before a true evaluation of this therapeutic agent may be made.

SUMMARY

Clinical observations, which are meaningful, are dependent upon a well-controlled dental operation carried out in the hands of a meticulous and dedicated professional man. Surprisingly, such fertile environments are not plentiful. For that reason, laboratory data accumulate without the essential parallel clinical research.

PRESERVATION OF PULP HEALTH DURING COMPLETE COVERAGE PROCEDURES

M. H. Berman DDS, JADA 70(1): 83-89, Jan 1965.

This author points out the often neglected fact that pathologic changes in the dental pulp can be induced by operative dentistry as well as by caries. The methods he describes for prevention of such induced pulp pathology apply to routine cavity restoration as well as complete coverage procedures. Each dentist in general practice would be well advised to refresh his knowledge by study of this article.

One might reverse the author's second paragraph by pointing out that pulp damage from ill-advised operative procedures in routine cavity preparation might initiate chronic pulpitis which, in later years, would preclude use of that tooth as an abutment for an extensive prosthesis. In using modern high-speed cutting techniques, use of an adequate air-water spray at the cutting site is necessary to control the temperature rise. Histopathological changes following heat-induced pulpal injury are not visible clinically, but the cellular changes which do occur subsequently lead to pulpal degradation, endo-

dontic therapy and, ultimately, extraction. Sedative medication of the pulp, including use of prednisolone, is described. Zinc oxide-eugenol type cements make the base of choice for indirect pulp-cappings under amalgam restorations; but a calcium hydroxide barrier is necessary under resin or silicate cement restorations. In addition, use of a cavity liner to occlude freshly cut dentinal tubules is important. The author also discusses precautions to be taken with hot compound impressions, as well as the problem of the hydraulic pressure generated in cementation of full coverage restorations.

TOPICAL USE OF PREDNISOLONE IN PERIODONTICS

LCDR Geral M. Bowers DC USN and LCDR J. Roy Elliott DC USN, Jour Periodont 35(6): 36/486-38/488, Nov-Dec 1964.

One hundred thirty-two teeth were treated for thermal and tactile hypersensitivity by topical application of

prednisolone solution. The solution appeared effective in the treatment of sensitivity due to incisal (occlusal) fractures, extensive occlusal adjustment or odontoplasty, periodontal surgery and post scaling and root planning procedures. It reduced sensitivity related to gingival recession but the results were not as dramatic and some of the teeth failed to respond or suffered relapse. A second application of prednisolone solution in combination with desensitizing toothpaste proved helpful in the control of persistent cases of hypersensitivity.

There was no instance of a visible side effect of the prednisolone solution. Although no conclusions can be based on the findings of this clinical study, the authors believe the topical application of prednisolone solution will prove to be a simple and yet effective method in the control of thermal and tactile hypersensitivity in the periodontal patient.

The original article provides the information concerning the materials and methods used.

PERSONNEL AND PROFESSIONAL NOTES

Dental Officer Presentations. Four dental officers of the U.S. Naval Dental School, NNMC, Bethesda, Maryland, made the following presentations:

CAPT Gordon H. Rovelstad DC USN, served as Chairman of a study group, sponsored by the American College of Dentists, concerned with "Changing the Dentist's Image of His Own Profession." The group met 17-20 January in St. Louis, Missouri.

On 26 January, CAPT Rovelstad presented a lecture entitled "Current Trends in Preventive Dentistry," before the Education Department of the New York State Association of Supervising Dentists for Schools in Albany, New York. CAPT Rovelstad also talked on "Preventive Dentistry and Children's Dentistry," before the Alpha Omega Society on 16 February, in Washington, D. C.

CAPT Frank J. Kratochvil DC USN, lectured on "Designing Removable Partial Dentures," before the Old Dominion Study Club on 25 January in Arlington, Virginia.

CAPT Theodore R. Hunley DC USN, served as Panelist and Essayist before the Chicago Dental Society, 21-24 February in Chicago, Illinois. The presentation

was entitled, "Operative Dentistry Supports the Treatment of Advanced, Periodontal Disease."

LCDR John S. Lindsay DC USN, gave a Dental Essay entitled, "Emergencies in the Dental Office—Treatment Phase," before the Commonwealth Study Club on 4 February in Arlington, Virginia.

Dental Officer Presides Over Gold Foil Study Club. CDR C. A. De Laurentis DC USN, was elected President of the Metcalf Gold Foil Study Club of San Diego, California, for the year 1965.

Dental Officers Attend Meeting at Olongapo, P.I. Dental Society. LT R. L. Wellington Eng DC USNR of the Dental Department Subic presented an illustrated slide lecture and case study entitled, "Clinical Endodontia and Immediate Apicoectomy," before the Olongapo, P.I. Dental Society. Dr. Amado Veloira of Olongapo is the President of the Host society. President of the Philippine National Dental Association, Dr. Agaton Ursua from Manila attended the meeting. CAPT Richard D. Calhoun DC USN, Senior Dental Officer, and CAPT George H. Sandman DC USN, with other dental officers from NAS, Subic Naval Station were also present.—From: Dental Department News, Naval Station, Subic Bay, P.I.

NEURO-ENDOCRINOLOGY AND REPRODUCTION

A WHO Scientific Group on Neuro-endocrinology and Reproduction in the Human convened in Geneva from 8 to 14 September 1964.

Neuro-endocrinology is a rapidly developing science,

of particular importance for the understanding of human reproduction. The Scientific Group's discussions covered normal and abnormal aspects of the physiology of reproduction, with special reference to lesions, both neoplastic and traumatic.—WHO Chronicle 18(8): 312, August 1964.

PREVENTIVE MEDICINE

TUBERCULOSIS CONTROL IN THE NAVY—ARE WE DOING ENOUGH?

CAPT Donald C. Kent MC USN, Head, Tuberculosis Service U.S. Naval Hospital, St. Albans, New York.

The Task Force on Tuberculosis Control recently submitted to the Surgeon General, U.S. Public Health Service, a report which caused the nation to face the unpleasant fact that there may be reason for "real concern over the current degree of effectiveness of tuberculosis control efforts in the United States". New cases of tuberculosis had diminished sharply from 1950 to 1960, as demonstrated by the following reported cases: 84,304 in 1953, 67,148 in 1957, and 55,494 in 1960. This trend has begun to taper off during the past 3 years, with 53,315 cases being reported in 1962, a reduction of less than 1% from the 1961 total. A more alarming note is found in reports from specific areas, e.g., New York City, with a dramatic increase in new case reports in 1963. Instead of a leveling off, many areas are noting an increase in new cases of tuberculosis; herein lies reason for concern. The demand for more effective control in the years to come, if real tuberculosis control and eradication are to be achieved, has already been sounded by the Task Force on Tuberculosis and echoed by the Chairman of the House Appropriations Committee for the U.S. Department of Health, Education, and Welfare.

Table 1 shows that U.S. Navy statistics for new cases of tuberculosis have followed a similar course, with

TABLE I
NEW REPORTED CASES, TUBERCULOSIS,
ACTIVE, PULMONARY, U.S. NAVY AND
MARINE CORPS 1953 THROUGH 1960

| YEAR | MINIMAL | MODERATE ADVANCED | FAR ADVANCED | TOTAL |
|-------|---------|----------------------|-----------------|-------|
| 1953 | 135 | 183 | 63 | 381 |
| 1954 | 111 | 153 | 50 | 314 |
| 1955 | 141 | 149 | 35 | 325 |
| 1956 | 133 | 133 | 28 | 294 |
| 1957 | 87 | 107 | 24 | 218 |
| 1958 | 95 | 70 | 23 | 188 |
| 1959 | 101 | 75 | 15 | 191 |
| 1960 | 101 | 68 | 17 | 186 |
| Total | 904 | 938 | 255 | 2,097 |

gradual reduction in cases reported during the early 1950s, and a leveling off during the late 1950s. Review of these figures also illustrates another fact—approximately 50% of cases admitted during the latter years of 1950 had minimal disease. There were a number of factors contributing to this distribution of case severity among which, in the Navy, was the emphasis placed on early case finding by annual chest X-ray.

A review of Table 2, tuberculosis admissions by 6-month periods, January through June, to the Tuberculosis Service, U.S. Naval Hospital, St. Albans, for the years 1960 through 1964, cause real concern regarding recent trends in the Navy. The increase in 1963 and 1964 as compared to 1961 and 1962 is noteworthy, since it parallels the previously mentioned statistics for similar periods in certain areas of the United States. Of great concern is the fact that during 1963 and 1964, there was noted a predominance of patients with moderately advanced tuberculosis over those with minimal disease. An explanation for this trend is not readily available. It would appear that these cases are seeking hospital admission later in the disease process than in previous years, certainly just the reverse of what would

TABLE II
ADMISSIONS, NEW REPORTED CASES OF TU-
BERCULOSIS FOR SIX-MONTH PERIODS, 1
JANUARY TO 30 JUNE, 1960 THROUGH 1964 BY
THE TUBERCULOSIS SERVICE, U.S. NAVAL
HOSPITAL, ST. ALBANS, NEW YORK

| SEVERITY OF DISEASE | | | | | |
|---------------------------|------|------|------|------|------|
| | 1960 | 1961 | 1962 | 1963 | 1964 |
| Minimal | 36 | 23 | 25 | 32 | 25 |
| Moderately | | | | | |
| Advanced | 13 | 7 | 9 | 30 | 32 |
| Far | | | | | |
| Advanced | 13 | 16 | 6 | 4 | 9 |
| Miliary | | | | 1 | 2 |
| Total | 62 | 46 | 40 | 67 | 68 |

be anticipated if our tuberculosis control program was being properly executed.

A review of selected case reports from the wards of the U.S. Naval Hospital, St. Albans, brings into sharper focus certain aspects of the tuberculosis control program which have been mishandled. The tuberculosis control program as now in operation, in conformance with current instructions of the Bureau of Medicine and Surgery, if properly implemented, contains the essentials of a control program similar to that outlined in the previously mentioned Task Force report. Only with complete implementation by all personnel can it be expected to yield the anticipated and desired results.

CASE REPORTS

J.M.L., a 23-year old Pvt./USMCR, was first admitted to the sick list in October 1963 when an abnormal chest film was noted upon arrival for recruit training at a marine corps recruit depot. Evaluation revealed a cystic lesion in the right upper lobe, and a sputum specimen was positive on culture for *Mycobacterium tuberculosis*.

He had enlisted in the Marine Corps in August 1963, and a chest X-ray taken at that time was reported to be negative. When reviewed, however, the cavitary lesion was present at the time of enlistment.

Antituberculous chemotherapy was given; he was discharged from the Naval service, and admitted to a civilian sanitarium near his home for continuation of the therapy. Upon his admission to the sick list, an epidemiology report was filed so that appropriate contact studies could be instituted.

Comment: Special attention is required for evaluation of chest films on enlistment. An incorrect interpretation leads to a multitude of problems not only administrative problems relative to medical discharge, but also to being in contact with a large number of personnel during recruit training. The problem of contact investigation and evaluation of a recruit company after the completion of their training and transfer to new activities can lead to logistic problems of an almost insurmountable degree.

W.T.G. is a 36-year old Sgt./USMC. He was admitted to the Naval Tuberculosis Treatment Center with a history of documented PPD conversion and an abnormal chest X-ray. He had been stationed at the same marine corps recruit training depot as J.M.L. After contact with J.M.L. was reported, a PPD was done in September 1963 which was reported as negative. A chest X-ray was not done at that time, however, he had had a chest film taken in August 1963. This was reported as negative; on re-evaluation, though, this film revealed an infiltrate in the left upper lobe.

After the negative PPD in September 1963 no further tuberculin skin tests were performed, in spite of a notation in the Health record stating that this was to have been done in November and December 1963 and March and September 1964. He was admitted to a

naval hospital in May 1964 for evaluation of a duodenal ulcer, and a chest X-ray taken during his initial workup revealed the presence of an infiltrate in the left apex. The PPD at this time was positive with 20 mm induration; a sputum was positive on smears for acid fast bacilli.

Comment: Contact with a recruit, not necessarily J.M.L. during his training was probably the source of this patient's tuberculosis. Contact studies were instituted as a result of contact with J.M.L. but were never completed since only the one PPD (September 1963) was done. Completion of the study at the 3, 6, 9, and 12-month periods possibly would have allowed earlier diagnosis of his conversion, and possibly by INH chemoprophylaxis active disease could have been prevented; this is at least the aim of such a program. That a significant degree of protection is provided by INH prophylaxis now seems well documented. More complete followup of the contact studies is necessary in the operational Navy, as shown by this and other records.

K.R.C., a 24-year old EM3/USN, reported aboard a carrier in December 1961, and while aboard the ship, he was a contact of an active case of tuberculosis. This contact occurred at a time when a number of cases of tuberculosis were being found aboard this ship. He had had a negative PPD and normal chest X-ray when in recruit training in 1960. On the report of the contact, a PPD was accomplished in June 1963, and was reported to be negative; repeated negative PPDs were noted in July and October 1963. A PPD was reported to be positive in February 1964; a chest film was taken and was essentially negative. No bacteriological studies were done and no INH chemoprophylaxis was instituted in spite of the documented conversion. A chest X-ray was repeated again in April 1964 and was reported to be abnormal. INH therapy was instituted in May 1964, however, no entry was made in the health record of this fact. He was finally transferred to a naval hospital in mid-May 1964 when a nodular infiltrate with central cavitation was noted in the left upper lobe. Review of his history at that time revealed that he had noted fatigue, anorexia, night sweats, and a 23-pound weight loss since March 1964. In spite of these symptoms and the documented PPD conversion, even on a ship with a known full-brown tuberculosis epidemic, no further workup was instituted nor was INH chemoprophylaxis instituted until after the parenchymal infiltrate became evident.

Comment: Proper studies were accomplished on the man, with PPD being done at the designated times, however, when conversion was discovered, no bacteriological studies were accomplished, and no INH prophylaxis was offered to the man. It was not until after an abnormal chest film was noted (2 months after documented conversion) that INH chemoprophylaxis was ordered. The fact of such therapy was never noted in the health record for later medical officers to observe; the history of treatment was obtained from the patient.

This occurred on a naval ship during a tuberculosis epidemic, the first case of which was another documented convertor not given the advantage of INH chemoprophylaxis.

R.P.O., a 23-year old Pvt./USMC, was being examined prior to leaving for a tour of duty in the Mediterranean in April 1963. A PPD was noted to be markedly positive. A PPD done in April 1962 was reported to have been negative. In the interim, he had been in contact with a marine with active tuberculosis, however, no contact study was done. At the time of the positive PPD, a chest X-ray was reported to be abnormal, however, later review of this film revealed it to have a negative film, the abnormality was in truth an artefact. He gave a history of hemoptysis and of a 12-pound weight loss; smears of sputum were negative for acid fast bacilli. In spite of the PPD conversion, and what was felt to have been an abnormal chest film, and the presence of symptoms, he was allowed to continue on duty (!) and was transferred to the Mediterranean with a marine unit. INH chemoprophylaxis was never instituted. Shortly after arrival in the oversea area a culture of sputum obtained at the time of evaluation was reported as positive for *Mycobacterium tuberculosis*.

He was transferred to a tuberculosis treatment center. Evaluation revealed no evidence for endobronchial disease; chest X-rays were all negative. Because of the documented PPD conversion and the positive culture, antituberculous chemotherapy in conventional manner was instituted.

Comment: There is a misapprehension among many medical personnel that primary tuberculosis (manifested by PPD conversion) is a completely innocuous condition, not attendant by any problem of contagion. That this is not always true is indicated in the case of R.P.O., who was found to have a positive culture of *Mycobacterium tuberculosis*, in spite of his negative chest film. That he was contagious, at least to a degree, at the time of sputum culture cannot be disputed. It has been well-documented in the past that positive cultures at the time of conversion are not a rarity: 40% of one series of recent converters were found to be positive, 50% of another.

R.P.O. is not an isolated case; a series of such cases with documented PPD conversion, negative chest film, and positive culture have been seen and evaluated at the two Naval Tuberculosis Treatment Facilities. Because of this fact, bacteriological studies are imperative in all converters, including bacteriologic cultures of specimens of sputum or gastric contents. Such converters may be possible sources of further dissemination of disease. Outbreaks of tuberculosis can be contained only by identifying all sources of contagion.

Other failures are evident in the case of R.P.O. INH prophylaxis was not instituted even with documented PPD conversion. Contact studies had never been insti-

tuted in spite of his tuberculosis contact. Last, but not least, in spite of the conversion, abnormal chest film interpretation and history of contact with an active tuberculosis case, he was allowed to be transferred overseas with a troop shipment. The explanation for this last sin of commission may lie under the heading of APATHY or INERTIA on the part of medical department personnel.

This is not an isolated instance of incomplete evaluation of contacts, by improper followup, failure to include bacteriologic studies of all convertors and failure to institute INH prophylaxis. These facets of tuberculosis control do not require hospitals for their execution —these are failures in the field at the time and place where control efforts can be maximally effective.

P.E.M., a 22-year old HN/USN, was noted to be a PPD convertor in August 1962. During the preceding nine months he had worked on the contagion ward of a naval hospital. He was carefully evaluated at that activity, chest X-rays were negative, and sputum and gastric cultures were negative on culture for *M. tuberculosis*. He was started on INH 100 mgm t.i.d; and followed in accordance with Bureau of Medicine and Surgery instructions at quarterly intervals; a chest film in October 1962 was normal. A repeated chest film in January 1963 revealed a left upper lobe infiltrate. Upon questioning, the HN claimed that he had faithfully taken his INH in the prescribed dosage.

Further evaluation at a naval tuberculosis treatment facility revealed that the apical infiltrate had developed a central cavity, and sputum and gastric cultures were negative for *M. tuberculosis*. PAS was added to the regimen. In spite of continuation of therapy, the cavity did not close, and after six months of therapy a thick walled cavity was resected, along with apical posterior and anterior segment of the left upper lobe. Tissue smears were positive for acid fast bacilli; tissue cultures were negative.

Comment: It must be pointed out that in spite of every effort to do a proper workup, institution of INH chemoprophylaxis will be a failure in a certain number of cases with a developing active lesion. However, such a failure does not disprove the effectiveness of chemoprophylaxis but merely underscores the necessity of careful followup of all those individuals on the prophylaxis program to prevent such a development.

This case emphasizes an additional point, the necessity for the medical officer to ensure that patients started on the INH program are taking their therapy regularly and in the recommended dose. This corpsman swore he had taken his treatment, but in many cases a history of intermittent or haphazard prophylaxis may be obtained. Statistics are available which demonstrate that of such a group, 15% never commence their treatment, 38% never complete the treatment for the twelve months, and of the remainder 47% of those completing the treatment, have not taken the dose regularly. These figures emphasize the necessity of properly indoctrinat-

ing converters in regard to the implications of a positive tuberculin reaction and the need for prophylaxis and followup throughout the treatment year and for a total of at least five years.

T.L.H., a 20-year old DKSN/USN, was admitted for evaluation of an abnormal infiltrate in his left upper lobe noted at the time of a chest film screening because of a tuberculosis epidemic aboard his ship. He was a shipmate of K.R.C., previously reported. Review of his health record revealed that he had been on active duty since 1962, but had had no PPD accomplished on entry on active duty since he was a reservist who had not been given recruit training at a naval recruit training center. He stated that he had had a PPD done in 1963 after a tuberculosis contact. This was not recorded in the health record, and no further studies were accomplished. At the time of admission, he had an apical infiltrate, a positive PPD, and probably recently acquired tuberculosis from aboard his ship. The time of conversion could not be documented since no records of previous PPD were in his health record.

Comment: This USNR member is one of many processed through the treatment centers who have missed their initial PPD skin test on entry into active duty. Activities processing such individuals must assume responsibility for accomplishing the tuberculin skin test. Knowledge of previous PPDs is of great clinical importance in cases such as T.L.H. with a minimal infiltrate. The lack of proper entry when the test was accomplished is a gross defect, and this should be corrected if clinical facilities are to use such health records to their utmost advantage. A recent survey of health records by the Inspector General, Medical, has revealed that less than 50% of health records examined contained information as to previous PPD studies; each activity must ensure that this all important baseline is recorded in the health records of their personnel.

An incorrect or illegible entry is as poor as no entry. Activities should assure that PPD entries are complete and correct as to type of tuberculin used, degree of reaction (induration), and date of administration. Too many entries leave questions impossible to answer as to test strength used, and the meaning of the reading entered in the record. Reactions should be read as millimeters of induration, not erythema, and should be exact as to number of millimeters, not noted to be one or two plus.

V.D.W., a 56-year old GMGC/USN, was first admitted to the sick list in July 1960 because of an abnormal chest roentgenogram. He was first noted to have an abnormal chest film in 1950, however, no treatment was recommended at that time and in the interim no definite followup was carried out.

Evaluation in 1960 revealed bilateral fibrocalcific nodular densities at both apices, and a gastric culture was positive for *M. tuberculosis*. Treatment with INH and PAS was instituted in conventional doses. Sputum

conversion occurred in one month and followup X-ray revealed partial resolution of the infiltrate. He was boarded to limited duty in November 1961, and therapy was discontinued after 18 months of treatment. After re-evaluation in November 1962, he was returned to full duty with no recommendation that followup be continued. No tomograms of the chest were obtained during his 1962 re-evaluation.

This man requested a film be taken in October 1963, and at that time a cavitary lesion was suspected which was confirmed by tomography. A gastric culture was positive for *M. tuberculosis*.

After appropriate antituberculous chemotherapy, the cavitary residual lesion was resected, with an uncomplicated postoperative course. Therapy continues.

Comment: Several points appear pertinent regarding V.D.W. First, an abnormal chest film had been noted but inadequately followed for 10 years. At some period of time, he developed an active lesion that allowed spread of his disease throughout an unknown number of contacts for an unknown amount of time prior to its discovery. Recommendations of the Arden House Group meeting in an effort to develop procedures to further tuberculosis eradication, would now include prophylactic chemotherapy for such a lesion. This recommendation is being applied in many cases such as V.D.W. at present, with an aim of wiping out tuberculosis in our population. All abnormal chest X-rays should be completely followed up; this must include proper bacteriologic studies and comparison with previous films. Inactivity or state of arrest cannot be determined without both stability of X-ray plus negative bacteriology.

The failure to recommend followup on return to full duty for V.D.W. and the subsequent course of his disease demonstrates the necessity for *lifetime* followup, with chest X-rays and bacteriologic studies performed at least annually, of all patients having had tuberculosis.

DISCUSSION

Review of the above case reports brings into focus certain points of the Navy Tuberculosis Control Program that need further and better controlled implementation. A well-outlined program is not available in the U.S. Navy, and should be familiar to every medical officer, whatever his position. Only by conscientious effort on the part of all Medical department personnel can it be expected to result in reduction and control of tuberculosis in the naval service. The fact that the statistical trend shows a persistently increasing problem of tuberculosis, and the fact that epidemics continue to occur in naval shore activities and aboard ships must direct our attention toward the need for more complete and more effective implementation of the tuberculosis control program. All medical officers must regard this as their personal responsibility to assure that all aspects of the tuberculosis control directives, promulgated by the Bureau of Medicine and Surgery, be completely and

effectively implemented. *APATHY* toward tuberculosis and tuberculosis control must not be allowed to develop, for apathy and control of the disease are mutually exclusive.

A STATE OF APATHY?

In a recent survey conducted at one of the U.S. Navy receiving stations, 50% of the records of personnel reporting for overseas transportation showed one or more immunization discrepancies. Forty-two percent of reporting personnel did not have a Department of Defense Immunization Certificate, DD Form 737, in their possession or an entry of immunization in their health records; in the case of civilians or dependents no International Certificates of Vaccination, PHS-731 had been prepared. Forty percent required 2 or more immunizations. The experience at this station is not unique. The situation might be duplicated at almost any Navy or Marine Corps activity in the United States. Many individuals arriving at points of embarkation for transportation by the Military Sea Transport Service (MSTS), and Military Air Transport Service (MATS) report without required immunizations or records of immunization. Other common discrepancies reported are as follows:

- a. Date improperly denoted by figures versus three letter abbreviation of the month.
- b. Immunization recorded as given earlier than interval specified for subsequent series.
- c. Smallpox vaccination dated on date given versus date read.
- d. No apparent attention when revised instruction is issued changing requirement for entry to various geographic areas.

The importance of immunization in military operations has been well documented in many wars. In the Korean War, for example, there were 50,000 cases of smallpox among the South Koreans, while only 30 cases occurred among all United Nations troops; without protective vaccination, a military catastrophe might have resulted. Yet, despite frequent emphasis of such facts, proper immunization is often neglected.

It is the responsibility of all members of the Medical Department to exert a continuing effort to maintain a satisfactory immunization status of all personnel under their care. The Medical Department of each Naval and Marine Corps activity should emphasize the importance of completion of and proper recording of all immunizations of both military and civilian personnel, including dependents, as described in BUMED Instruction 6230.1D, "Immunization Requirements and Procedures." A state of apathy must not develop.

—PrevMedDiv, BUMED

Among the new methods and techniques being tried out for the control of the snail vectors of bilharziasis is the use of an electric "barrier" to keep snails from passing given points in a stream.—WHO Chronicle 18(11): 431, November 1964.

SYMPORIUM ON VENEREAL DISEASE

The University of California at Los Angeles held a Symposium on Venereal Disease on 6-7 February 1965 at the University. Members of the Medical Department of the U.S. Navy may obtain a brochure describing the program and results of the Symposium by writing to:

Thomas H. Sternberg, M.D.
Professor of Dermatology and
Assistant Dean in Charge of
Postgraduate Medical Education
University of California
Los Angeles, California

—PrevMedDiv, BUMED

EARLY DETECTION OF PHENYLKETONURIA

Phenylketonuria is the result of an inborn error of metabolism and usually produces severe and irreversible brain damage in young children, requiring in most cases life long institutionalization. However, these children are clinically normal at birth, and with early detection and prompt treatment through the provision of a special diet, there is every reason to expect that this brain damage can be prevented. Aside from important humane considerations, each case detected and cared for represents a significant economic saving to the country.

Currently 18 states have laws authorizing their respective public health departments to implement a mandatory phenylketonuria testing program of infants. The frequently employed ferric chloride and phenistix tests, though acceptable for testing older children, are not sufficiently sensitive for screening newborn babies. If the condition of phenylketonuria is not detected until the child is 1 month of age or older, irreversible brain damage will have occurred and treatment may be futile. In view of this, the state of Massachusetts has recently enacted legislation requiring the testing of every infant born in that state by the Guthrie technique. This test, also known as the *Bacillus Subtilis* inhibition test, is effective in detecting the condition of phenylketonuria in infants under one month of age and is usually performed on the third to fifth day after birth. The test requires only a small amount of venous or capillary blood and a heel puncture is a convenient method of obtaining the specimen. Since introduction of this testing program in a state-wide basis in Massachusetts, 90,000 newborn infants have been screened and 10 cases of phenylketonuria have been discovered and placed on treatment.—Tuberculosis Control Section,

PrevMed Div, BUMED

KNOW YOUR WORLD

DID YOU KNOW?

That water was at the roots of the civilizations that sprang up on the banks of the rivers Nile, Tigris, Euphrates, Indus, Ganges and the Yangtze Kiang?

People were not then as numerous as they are now; they were not increasing at the explosive rate common in the second half of the 20th century, their urbanization was not as complex, and the sources of pollution were simpler. Today, over 200 million urban people do not have access to a water supply that by modern standards is safe and ample. (1)

That water industry in the United States, by weight of material handled, is 7 times bigger than all other industries put together?

It takes: 10 liters of water to produce 1 liter of gasoline, 40 liters of water to produce 1 can of vegetables, 100 liters of water to produce 1 kilogram of paper, 600 liters of water to produce 1 kilogram of woolen cloth, 3,500 liters of water to produce 1 ton of dry cement, 20,000 liters of water to produce 1 ton of steel. (2)

That "Skunk Boats" ("Hydrophobia Skunks"), were real enough to the Arizona cowhands?

As late as the roaring twenties, "skunk boats" were made to order by the local tent and awning purveyor by use of heavy canvas, about 6 x 3 x 2 feet, which could be folded and carried in a bed-roll or opened, it could be staked out held by a stick at each corner with the bed-roll thrown in it for sleeping at night. One cow puncher put it this way, "I wasn't much put out by rattlers, but to be bitten by a hydrophobia skunk, man that would be fatal." The skunk boat has joined the prairie schooner in limbo. (3)

That the 1954 epidemic of hemorrhagic fever in Manila, Republic of the Philippines, affected mainly children?

Since then, outbreaks have occurred annually, with peaks every 4 years, affecting various cities and towns in the Philippines, in addition to Manila. In the first 9 months of 1964, 739 cases were hospitalized in Manila. Since 1956, dengue viruses 2, 3, and 4 have been isolated from patients. (4)

That in Bangkok, Thailand, a major epidemic of hemorrhagic fever occurred in 1958, mainly in children. Although small epidemics have been reported previously since 1958, outbreaks have occurred every year. In the first 7 months of 1964, 3,117 cases were hospitalized. Fatality rates varied from 4 to 10% in different outbreaks. At first, the disease seemed to be restricted to urban areas in the central plain and the southeast and southwest coasts, however, in 1964 significant outbreaks occurred in towns in north and northeast Thailand. At

least 4 and possibly 6 dengue viruses have been isolated together with chikungunya virus in Thailand. (5)

That the U.S. Army Medical Research Laboratory at Fort Knox, Kentucky, will furnish biochemical and pathological assistance to the Government of Costa Rica in a research program relating to venomous snake bites?

The joint study is expected to produce antiserums effective against each of the major species of poisonous snakes found in Costa Rica; to develop techniques for improvement of first aid and hospital treatment of snake bites; to evaluate chemical agents such as dihydrolipoic acid and tetracycline known to have some detoxifying action on snake venoms; and to develop other compounds for this purpose.

Venom from about 200 snakes will be used to venomize horses. Serum collected from the blood will be processed by the Biochemistry Department, School of Medicine, University of Costa Rica. To produce an antiserum, 2 - 4 months will be required.

New techniques or therapeutic agents to be used will be administered only by Costa Rican medical representatives. United States officials will not treat patients.

On completion of the 1-year program, a trained staff of Costa Ricans will continue independent work in the anti-snake serum program. (6)

That apprentices to surgeon-apothecaries were expected to maintain a jar of leeches in good fettle, ready for emergencies?

"The leeches were kept in a glass jar topped with porous cloth. Periodically, the apprentice rubbed them between his palms, half a dozen at a time, in order to remove the slime. If, before application, they were briskly towelled, they were supposed to suck blood with more avidity. Leeches spent long periods of extreme hunger and sometimes, despairing of pasturing on a poet's brow or a bishop's ankle, they would resort to cannibalism. A healthy leech was expected to be able to take in $\frac{1}{2}$ ounce of blood before being gorged. The charge to the patient was usually sixpence a leech." (7)

References:

1. WHO Mag World Health, July-August 1964, p 6.
2. WHO Mag World Health, July-August 1964, p 14.
3. CDC Veterinary Public Hlth Notes, DHEW PHS, July 1964, p 4.
4. WHO Wkly Epid. Record, 39:665. 30 Dec 1964.
5. WHO Wkly Epid. Record, 39:665, 30 Dec 1964.
6. News Release of the Office of Assistant Secretary of Defense (Public Affairs) Washington, D. C., 22 Dec 1964.
7. Medical Directors Notebook, Eaton Labs, Aug 1964, p 6 (E. S. Turner: Call the Doctor, M. Joseph, Ltd, London, 1958).

**NAVY EVENTS AT AMERICAN COLLEGE
OF PHYSICIANS
MEETING, CHICAGO, ILLINOIS,
22-26 MARCH**

The Navy will sponsor the annual Tri-Service social

hour which will take place on Tuesday, 23 March at the Waldorf Room, Conrad Hilton Hotel from 6:00 to 8:00 P.M. All military medical officers attending the convention are invited. Tickets will be available at the military booth at the registration desk.

—Professional Div, BUMED

MISCELLANY

BUMED 6222.9
BUMED-7213-TRW:rd
5 February 1965

BUMED INSTRUCTION 6222.9

Subj: Early detection of syphilis in patients with other venereal diseases

1. *Purpose.* To set forth requirements for examinations, including followup, of patients who have contracted nonsyphilitic venereal diseases, in order to detect early and unrecognized cases of syphilis.

2. *Action*

a. All Navy and Marine Corps personnel on active duty who are diagnosed as having nonsyphilitic venereal diseases shall have a serological test for syphilis in conjunction with initial treatment, when practicable, and at 2, 4, and 6 months after diagnosis. A summary statement shall be entered on Standard Form 600, Chronological Record of Medical Care, in the Health Record, stating serological results.

b. For purposes of this Instruction, nongonococcal urethritis is to be considered a venereal disease.

c. Incident to receipt or transfer of personnel, annual verification of Health Record, or any periodic physical examination, the member's Health Record shall be reviewed and when indicated appropriate followup action instituted as outlined in paragraph 2a above. In all cases where the current Health Record does not show a negative serology 6 months or more following establishment of diagnosis of nonsyphilitic venereal disease, a serology test for syphilis shall be obtained and the results recorded on Standard Form 600 in the Health Record.

S/R. B. BROWN
Acting

AMERICAN INDUSTRIAL HYGIENE CONFERENCE TO CONVENE IN HOUSTON, TEXAS

Noted industrial hygienists from the United States and seven foreign nations will present highly technical

papers May 3-7 during the 26th annual American Industrial Hygiene Conference in Houston, Texas.

The conference, cosponsored annually by the American Industrial Hygiene Association and the American Conference of Governmental Industrial Hygienists, will feature refresher courses, panel conferences and scientific exhibits in addition to the many individual papers to be presented.

Topics scheduled for general sessions include aerosol technology, analytical chemistry, biochemical essays, radiation medicine, engineering, air pollution, respiratory protective devices and toxicology.

GROUP DISCUSSION REDUCES ACCIDENT RATES

That people can talk their way out of accidental injuries, among other things, is indicated in a study sponsored by the Public Health Service, U.S. Department of Health, Education, and Welfare.

The study shows that an organized program of small discussion groups at a community level may help to reduce hospital admissions for accidental injuries at home. The initial findings of the research project were announced today by Dr. Paul V. Joliet, Chief of the Division of Accident Prevention.

About 4,000 residents of Roxborough, a part of Philadelphia, Pennsylvania, participated in the project by meeting in small groups and public meetings to discuss accident causation and prevention. Subsequently, hospital admissions for accidental injury treatment dropped significantly in the Roxborough project area.

The group discussion experiment was undertaken by the Philadelphia Department of Public Health in 1962, with the community action phase concentrated in 1963.

A recently completed tabulation of data for the two years indicates that hospital inpatient accidental injury cases dropped 17 percent in the study area. In five census tracts of the study area, where 85 percent of the group discussion meeting activities were concentrated, inpatient accidental injury cases decreased 26 percent.

"The Division of Accident Prevention sponsored this work to find out if accidental injuries could be signif-

icantly reduced by the group discussion technique," Dr. Joliet explained.

"The project results indicate that the method used in Roxborough can reduce injuries requiring hospital care. We hope to confirm this through additional research. More than a quarter of all accidental deaths and about 19 million disabling injuries occur annually in or around homes in the United States. Any plan of action that will help to reduce these injuries is important to the health and well-being of the people of our country," Dr. Joliet said.

The Roxborough project was among 66 entries submitted to the 1964 Metropolitan Life Award Program for Research in Accident Prevention. It has been judged by the National Safety Council to be one of the 12 best in the Nation.

MR. J. R. BERKSHIRE APPOINTED TO AMERICAN PSYCHOLOGICAL ASSOCIATION COMMITTEE

Mr. J. Roger Berkshire, Head, Aviation Psychology at the Naval School of Aviation Medicine, has been appointed to the Henry A. Imus Awards committee of the American Psychological Association.

The Henry A. Imus Award, which consists of a certificate and cash, will be presented to a junior scientist in the military establishment for outstanding psychological research and must be below the rank of major or lieutenant commander and if a civilian, below the Civil Service grade of GS-13. The recipient will be presented the Award at the Association's annual meeting, which will be held September 2-8 in Chicago.

This award was established by the American Psychological Association in memory of the late Dr. Henry A. Imus who was Deputy and Assistant Director of Research at the U.S. Naval School of Aviation Medicine until his death in May 1964.—From: P.I.O., U.S. Naval Aviation Med Cen, Pensacola, Fla., 8 Feb 1965.

ANNOUNCEMENT OF SECOND ANNUAL ROCKY MOUNTAIN BIOENGINEERING SYMPOSIUM

This Symposium will be held in Denver, Colorado on 3 and 4 May, 1965. It is believed that it will be an even greater success than the First Symposium. The

TUBERCULOSIS CONTROL IN PANAMA

The Government of Panama, with the help of UNICEF and the Pan American Sanitary Bureau, which acts as the WHO Regional Office for the Americas, is to launch a tuberculosis control campaign in four of its nine provinces (Cocle, Herrera, Los Santos, and Veraguas) which together cover an area of 8,000 square miles in the centre of the country.

It is planned to x-ray and tuberculin-test all of the

sponsors hereby invite the submission of papers from potential contributors. Abstracts of not more than 250 words should be sent, with a brief biographic sketch, and without delay to:

Major G. J. D. Schock, DFC
U.S. Air Force Academy,
Colorado 80840

As a matter of interest to some of our readers, Major Schock holds a Ph.D. degree in Physiology.

—Editor

MEASLES VACCINATION ADVISED

With the advent of the 1965 measles season (February through April), Surgeon General Luther L. Terry, of the Public Health Service, Department of Health, Education, and Welfare, said today "that only about 7 million children have been protected by measles vaccines, leaving about 20 million susceptible children unprotected.

"Measles is so common a childhood disease that 90 percent of our children get it before their fifteenth birthday. Nevertheless, it is not the harmless illness that most mothers seem to think it is," Dr. Terry warned.

Although recovery is routine for most children, about 500 children every year die from illnesses stemming from it. These are caused by encephalitis or pneumonia. About one out of every 1,000 cases is followed by encephalitis. Fifteen to 20 percent of the encephalitis cases are left with such after-effects as mental retardation, visual or hearing problems, or behavior disorders, and about 10 percent of the encephalitis cases die.

"Over 490,000 cases of measles were reported to the Public Health Service in 1964, and we suspect that only about one-tenth of the actual cases were reported," Dr. Terry said. Many cases are not even seen by a physician, he explained, because so many parents think of it as an "innocent" disease.

"Fortunately, effective vaccines are now available and vaccination can relieve the parents of worry about measles and its after-effects. Only a single dose is required. In the meantime, any child that develops the telltale red splotches should be seen by a physician at once," Dr. Terry urged.—USPHS News Release.

area's 400,000 predominantly rural inhabitants—about one-third of Panama's total population. Drug treatment will be given to those found to have tuberculosis and people in good health will be vaccinated against the disease. Tuberculosis has been increasing in the rural areas of the country since 1946, following the return of many country-dwellers who had worked in Panama City, Colon, and other urban centres during the Second World War and had contracted the disease there.
—WHO Chronicle 18(11): 432, November 1964.

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U.S. NAVY MEDICAL NEWS LETTER